

THE DEVELOPMENT OF PERSONAL SPACE AND  
PERSONAL TIME PERSPECTIVE

By

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A DISSERTATION PRESENTED TO THE GRADUATE COUNCIL OF  
THE UNIVERSITY OF FLORIDA  
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR  
THE DEGREE OF DOCTOR OF PHILOSOPHY

UNIVERSITY OF FLORIDA

1975

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*To Marv--and the Kids!*

#### ACKNOWLEDGEMENTS

I would like to thank my chairman, Dr. Marvin E. Shaw, for doing more than a chairman is required to do. He helped and advised me at all stages of this project, but of greater importance, he gave me moral support and friendship and was always available when I needed him. I would also like to thank Dr. Lawrence J. Severy for his help in recruiting a team of assistants and especially for his aid in the process of data collection and analysis. My appreciation also goes to Dr. Barry Guinagh, Dr. Barry Lester and Dr. Norman Markel for serving as members of my supervisory committee.

Thanks also goes to Pat Burris, Jim Rogoff, Regina Kelly, and Dale Hamilton for serving as stimulus persons. Linda Bradmiller and Sharon Hatch were invaluable as interviewers. Michael Priser and Teddi Atkins helped greatly in the data collection process. All of these persons were extremely cooperative and patient in a situation which frequently was hectic and time consuming.

I would like to acknowledge the P.K. Yonge Laboratory School teachers and research personnel who gave their time and advice. They were extremely cooperative in allowing the use of their facilities and students. Each student is also recognized for his/her help in this project.

The parents of the four year old subjects are to be recognized for their voluntary commitment to participate. In all cases this meant including a trip to P.K. Yonge in an already busy daily schedule. Although their names are too numerous to mention, I express great thanks to them for this service.

I would like to thank Nancy Ashton and Barbara Mitchell for helping me with many technical tasks I could not complete long distance. My typist, Lynne Day, also helped and advised me with many things arising from a distance problem.

Finally, thanks go to Wayne for loving me.

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Abstract of Dissertation Presented to the Graduate Council of the  
University of Florida in Partial Fulfillment of the Requirements  
for the Degree of Doctor of Philosophy

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by

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March, 1975

Chairman: Marvin E. Shaw  
Major Department: Psychology

The purpose of this study was threefold: to observe developmental changes in personal space, to examine trends in personal time perspective across age and to investigate the relationship of personal space and personal time perspective. One hundred twenty children, twenty-four of each of five different age groups (three, seven, eleven, fifteen and nineteen), served as subjects. Three measures of personal space (placement, simulation and behavioral) were obtained. The primary measure of personal time perspective was conceptually derived and consisted of listing events at specific ages in each time domain (past, present, future) and evaluating these events on an importance dimension. Answers to a series of time related questions and semantic differential ratings of each time domain were also collected. All measures were administered in interview sessions with one of three female experimenters.

In the area of personal space, a significant increase in personal space size was observed from age three to seven, with a decrease thereafter until a stable size was reached around age fifteen. Variance in personal space behavior decreased with age. These changes occur at ages

consistent with changing reinforcements for interpersonal contact and changing cognitive development.

Two findings in the area of sex differences in personal space were observed. First, there was a significant decrease in personal space size in relation to opposite sex persons after the age when sex appropriate behaviors are fully learned. Second, this decrease in personal space in relation to opposite sex persons was accompanied, in males only, by an increase in personal space in relation to same sex persons. Explanation for this finding was in terms of more stringent reward and punishment systems for males in this culture.

Three major findings occurred in the examination of personal time perspective. First, past time perspective increased with increasing age. Changing reinforcements for emphasis of past events as well as changes in ability to store events and general cognitive development were discussed as reasons for this predicted result. Second, there was no corresponding increase in future time perspective with increasing age. Changes in expectations of receiving future rewards, increased realism, and an increased trend of living for the present may account for the failure to support this hypothesis. Third, a differentiation of critical life periods for males and females was observed. Females viewed high school as the peak time of importance, whereas males still reported future importance after high school graduation. This may be due to current fluctuating expectations of the female role.

The relationship between personal space and personal time perspective was generally not supported. Several theoretical and methodological reasons are possible. First, further research needs to test the assumption

that past and future time perspective are means of increasing interpersonal contact. Second, a more sensitive measure of present time perspective must be developed in order to examine the relationship between present time perspective and personal space. Finally, the failure to support the personal space and personal time perspective connection may be due to the inclusion of non-social events in the derivation of the personal time perspective scores.

## CHAPTER I

### INTRODUCTION

Historically psychologists have been concerned with the relationship of space and time in a physical sense. Research has typically investigated how the individual learns to quantify and perceive physical space, and similarly how he experiences time as measured by a man-made instrument utilizing a derived scale. The relationship between space and time has also been conceptualized in this physical manner. Although the relationship of these two physical dimensions has not been conclusively identified, the purpose of this paper is to present a new approach to the connection of time and space. This approach is innovative in that it is an attempt to relate personal and psychological usages of space and time.

The individual's perceptions and judgments about the situation in which he exists have been demonstrated to effect the behavior of that individual. E. T. Hall [1959] stated that all of man's behavior operates within the two interrelated dimensions of space and time. Accepting this thesis, it seems that the behavior of any person is determined by his perceptions of the environment in a spatial sense, as it currently exists, and also his perceptions of his environment in a temporal sense, as it has existed and will exist. Thus the attributions that influence an individual's behavior derive both from temporal and spatial surroundings.

If the effects of the environment are broadened to include both temporal and spatial phenomena, then what needs to be considered about



space and time is not their objective standardized and measurable existence in a physical world, but rather individual perceptions and interpretations of their effects. Therefore space and time will be considered in a limited and subjective manner. The term "space" will be restricted to the concept of personal space which can be briefly defined as the area surrounding the person's body into which unwanted intrusion causes discomfort [Sommer, 1969]. Time is similarly limited to the concept of personal time perspective or the relative importance of the past, present and future in the individual's life. These usages of time and space are personal and directly involve the individual's utilization and interpretation of the two dimensions.

This approach does not in any way deny the importance of time and space in physical terms. Rather it advances the notion of their inter-relatedness into a new domain. Further, as Piaget [1969] stated, it may be that the personal concepts derive from the physical and that in order for one to be completely cognizant of the psychological dimensions, one must understand physical laws. This paper does not deal with the question of the causal relationship of physical and psychological time and space but asserts that both the psychological and physical dimensions are learned phenomena. That is, as the child becomes increasingly aware of his environment spatially and temporally, he becomes more knowledgeable of both sorts of dimensions. As Piaget stated, "at all stages, . . . psychological time is based on physical time and vice versa" [Piaget, 1969, p. 217]. The suggestion of Piaget that "space is a still of time, while time is space in motion--the two taken together constitute the totality of the ordered relationships characterizing objects and their displacements . . ." [Piaget, 1969, p. 2], and those of Hall [1959] and

Sommer [1972] that time and space interact and influence each other are examined in this paper. Therefore the major purpose is to study such an interaction between personal space and personal time perspective. Further, since these phenomena do not seem to be present in very young infants, yet are present in most adults, it seems that they are acquired developmentally. Thus personal space and personal time perspective will be studied developmentally in children of various ages.

#### Relation to Other Areas of Social and Developmental Psychology

A study of these "personal" uses of space and time will provide important information for several traditionally researched areas in social and developmental psychology. It is not the purpose of the present paper to identify the complete potential of personal space and personal time perspective research to other areas more commonly examined. Therefore a few specific possibilities will be briefly discussed only in order to demonstrate the feasibility of relating personal space and personal time perspective to other trends of research in psychology.

#### Personal Space

Affiliation and attachment. These areas of research have in common the formation of a bond of attachment between one individual and another. Social psychologists have sought to understand why people affiliate [Schacter, 1959] and seek each others' company. Developmental psychologists [Cohen, 1974] have attempted to understand the formation of the specific attachment of a child and his most intimate companion--usually his mother. Various measurement techniques have been developed to measure these relationships. Spatial distances lend themselves easily as

indicators of affiliation. Personal space is, perhaps, another indicator of these behaviors. If so, then a developmental study of personal space yields important information about the formation of relationships with various others. The potential linkage of these areas needs to be examined.

Attitude formation. Similarly personal space has possible validity as an unobtrusive measure of attitudes toward other persons. The larger the distance maintained between two persons, the less likely they are to be friends. Again further validation of this idea needs to be obtained.

Attribution. Attributions made about other persons are based on the behavior of those persons. Behaviors uncommon to most individuals lead to more definite attributions of a personal characteristic [Jones, E., Kanouse, D., Kelley, H., Nisbett, R., Valins, S., Weiner, B., 1971]. Uncommon use of personal space behavior in relation to a specific stimulus person will thus cause attribution to be made about the individual using such uncommon personal space. A developmental study allows the examination of changes in personal space usage in relation to specific others with changes in age. Perhaps the characteristics typically labeled as adolescent are due to uncommon or "unadult" usages of personal space. A developmental perspective permits the study of adolescent behavior in these terms. For example, the gang phenomenon observed in young adolescents [Dunphy, 1963] is merely the changing use of personal space in relation to friends.

Personal space has importance in other areas of research also, but these examples support the utility of a developmental study of personal space behavior.

### Personal Time Perspective

Affiliation and attachment. The formation of attachment bonds occurs in a temporal as well as a spatial sense. An extremely strong bond formed in early childhood would tend to increase the personal importance of the past for an individual. Thus if no past time perspective is found, it may be due to a minimal level of attachment to persons in the past. A developmental study of personal time perspective allows examination of changes in emotional affiliation as age increases.

Cognitive development. The relevance of a developmental study of personal time perspective to stages of cognitive development as suggested by Piaget [1957] seems obvious and crucial. In order to form a personal time perspective the child must have attained a certain level of cognitive ability. Further, the personal use of time perspective is directly related to the ability to understand physical notions of time. These possibilities are discussed in more detail later (see Personal Time Perspective--Influence of cognitive development).

Personal time perspective has potential importance in other areas of social and developmental psychology but these examples serve to demonstrate its importance as a research area.

A developmental study of the relationship of personal space and personal time perspective thus has importance for social and developmental psychology. Before stating the specific hypotheses which will be examined in this paper, it is necessary to clearly define personal space and personal time perspective and to briefly review previous literature.

## Personal Space

### Conceptualization

Definition. Personal space is a specific utilization of general space by a person to maintain comfortable interaction distances. The idea of personal space as developed by Little, Hall, Sommer and Kuethe involves a spatial area surrounding the individual into which intrusion causes discomfort. It is an area, physically measurable which is, in essence, the self-boundary of the person; the area which he feels is uniquely his. For this reason it has been likened to a "portable territory," a physical area to which a person claims ownership. Thus personal space is the physical area beyond a person's body, which extends into space in general, which a person feels belongs to him.

Several variables have been found which specifically influence this physical area. First, personal space is dependent on the culture of the individual, with some cultures demonstrating consistently larger personal spaces than others [Hall, 1959]. Second, personal space size varies with the situation. A person interacting in a crowded subway may be able to withstand much smaller interpersonal distances than a person in a sparsely populated room in a museum. A person may experience discomfort in either situation, but when situational norms permit closeness the discomfort will occur at a closer distance than when situational norms call for large interpersonal distances. Thus in a museum one does not stand too close to another person since the sparsity and formality demand maintenance of large distances. In a crowded subway one cannot claim very much space, and extreme closeness must be evident for a personal space violation to occur. When discomfort is experienced in either

situation, personal space has been invaded. Thus acceptable personal space size may in extremely crowded situations diminish to zero [Sommer, 1969].

Third, the relationship in which the individual is functioning has an effect on the size of personal space. Interaction in intimate, friendly relationships yields consistently smaller personal spaces than a stranger-stranger relationship [Hall, 1966]. Finally, personal space is an individual, personal characteristic which is evidenced over time [Sommer, 1969]. Thus personal space, even though it is an individualized tendency, is influenced by the culture, the situation and the type of relationship in which a person is enmeshed at any particular time.

Because personal space size is influenced by these surrounding factors, it appears that many characteristic personal spaces are used by any one individual. Further, in extremely intimate situations, the person may feel no intrusion at all, thus personal space is zero. Thus the definition of "personal space" is actually a composite term describing the characteristic "bubble" surrounding a person in every possible situation. Obviously measurement of this "bubble" in all situations is impossible, therefore, the term personal space will be used here in conjunction with the particular situation in which it was measured. It was stated above that personal space is a relatively consistent personal characteristic. In terms of a "characteristic" personal space, this means that persons in various situations tend to use consistently greater or smaller personal spaces as compared to other persons in similar situations.

This interpretation of personal space can become extremely trivial if the uniqueness of each situation is emphasized. However, generally

speaking, personal space for similar situations and relationships are very much alike. Thus there is an appropriate personal space for close friends, and another one for strangers and enemies. An individual would maintain a similar personal space size in relation to all close friends. Thus one can view a continuum of types of personal space dependent on the relationship of the two interacting persons (holding situation constant). Further this is true for situations--there is a characteristic personal space for museums and another one for subways (holding the relationship constant).

Indeed Hall [1966] has delineated four distance zones for the American culture, each with a near and far phase, which are dependent on the relationship and the situation. Intimate distance, varying from zero to eighteen inches, involves situations and relationships classified as intimate. Touching is easily possible and contact is maximum. Use of this distance in public is not considered proper by American norms. Personal distance, which ranges from one to four feet, is conceptualized by Hall as the "protective sphere" that an individual maintains around his body. Again this zone depends on the relationship between the persons. "A wife can stay inside the circle of her husband's close personal zone with impunity. For another woman to do so is an entirely different story" [Hall, 1966, p. 120]. The third distance is social distance ranging from four to twelve feet. It is in this range that business and casual social interactions are conducted. Social distance is also used to maintain privacy even in close relationships. Finally, public distance (twelve feet or more) is used on formal occasions and by high status persons to maintain distance from the public.

Basically it seems that the resultant personal space is determined by two factors--the individual's attitude toward the other person(s) and the individual's belief about appropriate distancing in the particular situation in which they are interacting. Thus personal space is a behavior influenced by an attitude and a belief in a norm. It can, however, be used as indicative solely of the individual's attitude if the situation is appropriately interpreted or no norms are available.

A further limitation should be placed on the concept of personal space as used here. It is restricted to interaction with other animate beings. It is possible that intrusion by physical barriers and objects may cause discomfort, but this aspect of personal space invasion is not considered in this paper. Occasionally measurement in relation to an object such as a hat rack has been used as indicative of personal space size. However, since a major characteristic of personal space is that it is used to maintain comfortable interaction distances, personal space necessarily can be measured only with other persons. This distinction is critical when differentiating crowding behavior from personal space (see below).

Related terms. Literature dealing with spatial concerns has evolved under several different semantic labels; crowding, proxemics, individual distance as well as personal space. These areas all have in common the use of space by persons in interpersonal situations, yet each approach is in itself unique. Crowding occurs when many people are in a reduced physical area leading to increased density (number of persons per cubic foot). It depends on the number of people as well as the area size and may be created either by increasing the number of people or decreasing the area or some combination of both. Crowds of people result in reduced



individual distances which may or may not result in violations of the personal space needs of the individual. The critical factor in determining whether or not personal space is violated is whether the person experiences discomfort from these intrusions. Thus for some people a large number of persons will not produce an experience of crowdedness. Indeed Milgram [1970] suggests that in very crowded surroundings, such as New York subways, other persons are treated as non-humans and thus personal space is not violated. However, it seems likely that personal spaces would tend to be more frequently invaded in a crowded as opposed to an uncrowded situation.

A further problem in utilizing "crowding" literature is the differentiation of two types of crowding: too many people and too many things. In dealing with personal space, other people seem necessarily involved. Most empirical research induces crowding by a combination of reduced space and increased number of people although theoretically it would be possible to be crowded solely by objects. However in utilizing "crowding" research as indicative of personal space development, only that which deals with interpersonal crowding will be reviewed.

Individual distance has been described as "the characteristic spacing of species members" [Sommer, 1969]. Individual distance necessarily involves two or more persons and the culturally accepted spacing between them. In comparison with personal space, measurement techniques are similar (placing two felt figures on a board or having one person approach another). However a major difference exists. Individual distance is one specific distance between two persons in terms of a vectorial measurement whereas personal space is the space totally surrounding one person. In other words, measurement of individual distance is the

identification of one of an infinite number of points on the boundary of an individual's personal space. However due to the similarity of measurement techniques, personal space research is essentially individual distance research.

Finally, proxemics is a term used to describe a person's bodily orientation in space in relation to other people. It is a global term which includes individual distance, and other dimensions such as angle of body and/or head towards another person. This concept is specifically relevant for personal space only when using the individual distance measurement although similar results are often obtained for angle of orientation. However, for purposes of simplicity, only individual distance measurements in proxemics will be used as relevant for personal space concepts.

### Literature Review

Relevant literature will be described in three areas: crowding, proxemics, and individual distance/personal space. They are reviewed below as applicable to the developmental study of spacing behavior and with reference to possible sex differences.

Crowding. If people are aware of space, then the removal of space by increasing density should elicit differences in behavior. In an observational study of 20 children, ages two to three, Bates [1971] found that behaviors of the children changed as the group size increased or the density increased. She found that girls spent more time alone, tended to play in smaller groups, played significantly more often with same sex children, spent more time in the least used area of the room and increased in number of interactions of a conflict nature in the high

density situation. Boys similarly increased the percentage of conflict interactions but they, however, tended to play in larger groups. In a similar study of four and five year olds Loo [1972] found that in a 48-minute free play situation there was overall reduction of aggression, more interruption and more time in solitary play in a high density than in a low density setting. In viewing sex differences, boys overall were more aggressive than girls, whereas females were more nurturant and interrupted other children more. Boys were more aggressive in the low density than in the high density environment. Even at age three, increasing density and presumably therefore decreasing personal space caused varied behavioral effects.

Evidence from studies of adult crowding supports ideas of sexual differences. For example, Freedman [1971] found that in a crowded jury situation, men became more severe in their sentencing and females more lenient. Men reported that they found the experience less pleasant, liked each other less and thought they were a poor rather than good jury in the crowded as opposed to the uncrowded situation. Women found the crowded situation more pleasant and thought the other members were friendlier and more likeable. Further they believed they were a good jury. It is surprising that all these sex differences disappeared when mixed-sex groups were run. It is possible that different role expectations are evoked when opposite sex members are present. This could be caused by an increased concern with interpersonal affairs rather than the situation when the opposite sex is present. Overall, however, there is strong support for sex differences in crowding effects.

Proxemics. Proxemic patterning studies deal with the way people place themselves in interpersonal situations including such variables as

angle of orientation to others as well as interpersonal distancing in the interaction. The use of interpersonal distancing seems directly coordinate to the concept of personal space and it is usually this spacing which is a main measure of proxemic behavior. Viewed this way several studies have been conducted which yield information about the development of such a concept.

Markey [1971] specifically studied the ontogenesis of proxemic behavior in school children. She studied this behavior in 45 males and 45 females in nine different school grades by having them place felt figures on a board at appropriate and comfortable distances. She found that boys and girls placed the figures similarly and that older subjects, regardless of sex, placed the figures farther apart than younger subjects. She concluded that proxemic behavior is a socially learned process and that as subjects get older they learn to more accurately represent adult behavior. Her failure to find sex differences for this behavior is surprising but may have been caused by a small sample size as well as the use of a figure placement technique instead of observation of actual behavior.

Aiello and Jones [1971] studied ethnic and sex differences in proxemic behavior in first and second grade children. Observations of individual distances and angle of orientation were made in a free-play, outdoor setting. They found that significant differences across sexes were particularly noticeable in white children, with white males using a greater interpersonal distance than white females. In a more recent study, the same authors [Jones and Aiello, 1973] also studied third and fifth grade black and white children, this time in a controlled classroom interaction. In this case the effect of sex was more confused,

with black females using the closest distance and white females the greatest, with black and white males intermediate. None of the differences were statistically reliable. This confusing interaction could have resulted from their failure to separate the effect of different sex stimulus persons.

Several proxemics studies yield evidence that increased familiarity and similarity are correlated with decreased distance. McGrew and McGrew [1972] found that as the length of stay of three year olds at local nursery schools increased, their spacing in relation to other children decreased. Further if Ss had older siblings at the same nursery school, they used less space initially. Castell [1970] similarly found a decrease in interpersonal distance in one and one-half and three year olds as social and physical familiarity increased. King [1966] found that increasing friendly interactions in three to five year olds led to a decrease in distancing regardless of sex. Using adults, Allgeier and Byrne [1973] found that both males and females stood closer to a liked than a disliked member of the opposite sex. These studies suggest that interpersonal distance is affected by physical and social familiarity and liking in the same way that personal space has been shown to be affected by relationship and situation variables.

There are several difficulties in generalizing results from proxemic behavior to personal space. First, proxemic behavior is usually studied with actual conversation occurring between subjects. Verbal communication needs may influence and counter-affect any personal space norms that may be present. Second, the situation is particularly variable across proxemic studies as natural observations are often used. Situations vary from a playground [Aiello and Jones, 1971] to a zoo [Baxter,

1970] to a controlled classroom [Jones and Aiello, 1973]. Each situation tends to produce different effects. Third, interpersonal distance is in only one direction from the subject to the stimulus person whereas personal space is a space surrounding an individual completely. However, it does seem that many of the methods for measuring proxemic behavior are similar or identical to those used in measuring personal space, and for this reason perhaps the differences are mainly limited to the use of different terms as descriptive of the same behavior.

In reviewing crowding and proxemic literature, two findings are evident. First, there is a developmental trend demonstrating increasing use of distance with increasing age. However this is based only on the data presented by Markey [1971]. Second, evidence of sex differences is strongly prevalent. Freedman [1971] found that females are more comfortable in crowded situations than males. Aiello and Jones [1971] found that males use more space than females. However Jones and Aiello [1973] found the reverse pattern, although not statistically significant, that females use more space than males. Loo [1972] found that males were less aggressive in a high density than in a low density environment. Markey [1971] found no sex differences at all but her sample size was very small. In summary, there is evidence that there is increasing use of interpersonal space with increasing age. Further females use less space than males although this difference is not always present.

Personal space and individual distance. Several studies concerned with either individual distance or personal space have employed similar methodologies and are combined here for that reason. Russo [1971] studied interpersonal distance and eye contact relations in male and female children in kindergarten and grades three and six. She found that

interpersonal distance did not increase with age. However, females sat closer to other females than males sat to males, with this difference being greatest in the third grade. Variance was greater in male than in female behavior and tended to increase with age. It is possible that the failure to find increasing trends in distance is due to the fact that such concepts have not yet been learned by the child. With the increasing variance in male behavior it may be that what is appropriate is not apparent to the child. Trends may also be wiped out by the inclusion of only three sampling points.

Pederson [1973] studied personal space developmentally in grades one to six using eleven male and eleven female Ss in each grade. He utilized a figure placement technique in which cut out pictures of adults (male/female) and children (male/female) were placed by the subject at a comfortable distance to a cutout representing S. He found no consistent trend in development. However, male and female personal space sizes were roughly parallel with males having a larger size. Initially there were no differences, but by the third grade males had significantly larger personal spaces. Pederson also found various significant interactions dependent on the sex of the stimulus person. Both males and females placed opposite sex peers closest to themselves at all ages. This is surprising since it is generally believed that children of these ages like to maintain a large distance from opposite sex children [Sutton-Smith, B., Rosenberg, B., Morgan, E.F. Jr., 1963; Dunphy, 1963].

Meisels and Guardo [1969] and Guardo [1969] found that children use less space as they grow older and that they change and prefer closer proximity to the opposite sex around grade six or seven. This contrasts Pederson's findings that an opposite sex attraction is present at all

ages. They also demonstrated that the use of less space by females than males is dependent upon the person with whom they are interacting. If the stimulus person is described as someone disliked or feared (negative affect), females used significantly more space than males. Further, in positive affect situations children show a developmental pattern of increasing distances with same sex peers around the time they learn to use smaller distances with opposite sex peers. Thus there seems to be a reversal of intimacy patterns around grade six or seven or the beginning of adolescence.

Lerner [1973] studied personal space development of children in kindergarten through third grade in relation to three types of body build (ectomorph, endomorph and mesomorph) of the other person. Using a felt board instrument, he found that third graders used the most space. However, his developmental trends were not unidirectional and first graders used less space than kindergartners. He also found that females used significantly more space than males. This contradicts most of the sex difference literature presented below but may confirm Meisels and Guardo's [1969] results suggesting that sex differences are dependent on the affect of the situation. Perhaps females were more negatively affected by body build than males, producing a negative relationship and thus increased use of distance.

Fry and Willis [1971] studied personal space developmentally but in a manner reversed from other researchers. They attempted to determine the age at which a child is treated as an adult when he invades an adult's space. They had male and female children aged five, eight or ten invade male and female adults' personal spaces in a public setting. Observers rated the adults' behavior on the frequency of moving away, leaning away,



and amount of excessive motor behavior. Generally adults turned toward, smiled at and spoke to five year olds. Eight year olds were ignored and ten year olds evoked negative reactions from the adult. Mechanisms of escape from ten year olds were different for male and female adults. Men used barriers such as hanging their coat over their arm, whereas women tended to use physical behavior such as shifting weight from one foot to another. Thus adults expect children by the age of ten to have developed appropriate personal space standards.

Several attempts have been made to differentiate male and female personal space behavior. Generally females seem to have smaller personal spaces than males [Hartnett, Bailey and Gibson, 1970; Hiat, 1971; Kassover, 1972; Klukken, 1972; Leibman, 1970; Pellegrini and Empey, 1970; Sommer, 1962]. However, personal space size seems to be equally effected by the sex of the other person; that is, subjects are usually asked to approach a male or a female and stop at a comfortable distance. Females sit closer to a female stimulus person than males to a male stimulus person [Sommer, 1959; Pellegrini and Empey, 1970]. Both males and females stand closer to a female than to a male. Males stand closer to a female than do females and females stand closer to a male than males do [Horowitz, Duff and Stratton, 1970; Kassover, 1972]. Contrastingly, Thomas [1973] observed dyads at a beach and found that males sat closer to males than females sat to females. The sex effect appears to be an interaction between sex of subject and sex of the stimulus person. These studies were conducted with adult subjects and are representative of fully developed personal space concepts.

In accord with these sex differences, Hollander, Duke and Nowicki [1973] found that male personal space was related to the amount of maternal

affection received. Thus both third and fourth grade and college male subjects with small personal spaces also reported receiving significantly more affection from their mothers than males with large personal spaces. Females' personal space size was not related to this variable. Thus sex differences may be influenced by maternal affection.

Summary. In comparing the results obtained from the studies described above, several problems arise. First, the developmental trends in personal space are not consistent--Pederson [1973] and Russo [1971] find no unidirectional growth or decrease in personal space size. Markey [1971] finds that increasing age leads to increasing personal space, and Meisels and Guardo [1969] find that increasing age leads to decreasing personal space sizes. These conflicting results may arise for several reasons. First, three different versions of figure placement techniques were used. Methodological difficulties are thus strong. Second, Pederson and Markey stressed to the Ss that they choose a comfortable distance whereas Meisels and Guardo only asked Ss where they would be. Third, neither Pederson nor Markey specified whether the stimulus people were friends or enemies. Meisels and Guardo found increasing personal space distances with positive affect same-sex stimulus persons. Perhaps there is an interaction effect between affective and sexual relationships.

However, in spite of these inconsistencies three main trends appear relatively clear. First, personal space increases up to grade three then progressively decreases down to a culturally accepted level. Second, in grade six or seven opposite sex relations become critical for male and female children and correspondingly there is an increase in interpersonal distancing with same sex friends. Third, findings about sex differences in personal space are highly consistent with females having smaller

personal spaces than males. However, it is crucial to consider sex of stimulus person and the affective relationship as these variables differentially effect males and females.

### Personal Time Perspective

#### Conceptualization

Definition. The term time as used here will simply denote time as used in our everyday language. For instance, we use clock time of seconds, minutes and hours, which evolve into days, months, seasons and years. Time thus is an objective, culturally bound term which can be measured through common everyday instruments.

Basically there are three general ways of thinking about time, each of which has been defined and labeled in many ways. First, there is temporal judgment or the ability to estimate, reproduce or discriminate actual amounts of time as based on the culture's usage of particular defining terms. For example, a subject is asked to tell the experimenter when five seconds has passed or to reproduce a tone of a certain length. Second, time may be viewed in terms of a temporal attitude. This approach is a generic one but implies that each individual approaches the use of time in a positive or negative manner. More simply it can be seen as a collection of attitudes concerned with time functioning. For instance--is punctuality a favorable or unfavorable characteristic? Combining these attitudes toward several uses of time, one presumably can derive a composite temporal attitude. These first two approaches are not considered in this paper.

The third approach, and the one used in this paper, is temporal perspective. It has previously been described and labeled as time

perspective or orientation [Fraisse, 1963; Wallace and Rabin, 1960; Doob, 1971]. Referred to here as temporal or time perspective, this is a more subjective experiential usage of three main divisions of time; past, present and future. These three divisions of time can be understood in a layman's fashion. If one could, at this moment, stop the flow of time, then the past would simply be that which occurred before this moment and the future what will happen after this moment. The present would be the infinitesimally small frozen moment. However, time cannot be arrested and therefore these time domains, particularly the present, cannot be completely understood in such a simple manner. William James [1952] reports E. R. Clay's distinction of two types of present, the obvious present and the specious present. The obvious present is that described above. The specious present is the broadened experience of "presentness" that a person usually feels. For example, one experiences the past notes of a bar of music as happening in the present whereas only one note could possibly be in the obvious present. Further, past notes of a previous song would be in the obvious past. Thus even though the technical definition of present is the specific moment, in experiencing the present man may use a broadened range of time. The past, present and future, as used here, denote what the individual experiences for himself as past, present and future and thus may vary across persons. Further, this experience of time occurs at a point on the flow of time and is therefore as Lewin [1943] suggests, the perception of the past at a specific moment as well as the perception of the future and present at this moment.

Temporal perspective is the emphasis that an individual places on one of these three broad divisions of time. Essentially a person can be

of three types; past-oriented, present-oriented or future-oriented. However, it seems reasonable to suppose that persons who have the ability to understand all three divisions will retain some emphasis in each area, so that any one person will have past, present and future perspectives although one may be most dominant. Thus time perspective can be viewed as the relative importance that an individual places on the past, present or future.

Several further limitations must be explained. First, time perspective as defined above can be of two types, historical and personal. Historical time perspective is the emphasis the individual places on historical events in these three divisions of time. This is the individual's placement of himself on a historical time line. Personal time perspective is the importance of each of these areas in the individual's life involving his own personal attainments and losses. We will be dealing with personal time perspective or the relative emphasis an individual places on his own past, present or future. It is possible that historical and personal time perspectives influence each other in some sort of interactive manner although this is not the concern of the present paper. Thus the term time perspective is used to mean personal time perspective unless otherwise stated.

The second problem in dealing with time perspective is that of measuring a relative emphasis of each of the three time domains. We are making the assumption that the events that have happened, are happening or hopefully will happen contribute to the importance of each area. Thus measurement of each area can be attempted by measurement of the events which comprise that time area. Still several possibilities of measurement exist. First, a measure of time span for each area could

be obtained. Each area could be compared to each other area to obtain measures of comparative lengths. However, it is questionable whether mere length of time span is the most accurate way to assess the importance which an individual places on one of these areas. Therefore measurement of each area must include not only the time span of the events but also the importance of each event for the individual. Therefore even though a person may feel that many things will happen to him, if they do not matter to him, he will not be overly future oriented.

To briefly summarize, time perspective as viewed in this paper, can be described as the relative emphasis an individual places on one of the three time domains: past, present and future as commonly defined. Time perspective is personal in that it involves the person's perception of the importance of these three areas in his own life. Finally time perspective involves not merely temporal span of events but also the contributing factor of the importance of each event for the individual as perceived by the individual.

Acquisition of temporal labels. In considering a developmental study of time, a fourth approach must be considered, which is simply the acquisition of and ability to use temporal terms and labels utilized by one's culture. Thus before we can attempt to understand a child's temporal attitude, judgment ability or perspective, it is necessary to learn whether or not he even knows what is meant by a second, a month or any other defining label we use. Several studies have examined the child's developing reservoir of temporal knowledge. Ames [1946] studied children, ages 18 months to eight years, finding that there are actually several divisions of time knowledge that a child acquires. These include a general notion of time, an understanding of time of day, clock

time, an idea of age, use of past and future as well as the present, and finally an idea of a sequential ordering of events. Generally the child can tell what part of the day it is by age four, what day it is by age five and what time it is by age seven. Knowledge of months, seasons and years is learned around age seven although days of the week are known around age five. Most children are familiar with age concepts by age three. The use of past, present and future is of critical importance in the development of a personal time perspective. Ames [1946] found, by recording relative frequencies of statements dealing with the past, present and future in spontaneous conversations, that children first use only present terms, then learn future ones and lastly they use past words. By the age of 48 months the three tenses are used correctly and in the following proportions: present--47 percent, future--33 percent, past--19 percent. Although Ames feels these terms are used about equally from this point on, there seems to be variation at this age and her data do not show the proportions of usage at older ages.

Oakden and Stuart [1922] asked children, ages four to fourteen, various questions attempting to assess their temporal knowledge. They conclude that children reach an adult level of temporal knowledge by age thirteen or fourteen with age eleven being a rapid transitional period in development. They did not, however study the use of perspective terms such as past, present and future, but dealt mainly with time labels such as names of months and days. They further emphasized the child's developing ability to order historical events. They interpret the difficulty which children under age eleven have in ordering historical epochs as indicative of an inability to distinguish past and present. However, it remains questionable whether or not historical uses of temporal perspective

are related to personal temporal perspective as experienced by the child.

Two findings from this research on the acquisition of temporal labels are relevant to a study of the development of temporal perspective. First, children around the age of four can differentially understand and utilize perspectives toward the past, present and future in their everyday conversations. Everyday conversations of four year olds most likely involve descriptions of their own behavior or behavior of others whom they know. Second, children up to age 11 seem to have difficulty ordering historical events. Perhaps before a historical time perspective can be understood, a child must be able to order and think about his own life in terms of what has been, is and will be. Then he can take these dimensions and apply them to historical persons to obtain a historical perspective. It seems obvious that this is a more difficult task than using the terms in relation to oneself, for it involves not only temporal knowledge but also an ability to be sociocentric and to take the role of others [Piaget, 1969]. Thus it may be possible to study personal time perspective with young children but not historical time perspective.

Influence on cognitive development. This acquisition of temporal knowledge has been demonstrated to occur in accord with stages of cognitive development [Piaget, 1969]. Because of the interactive link between physical and psychological time, the child must learn physical concepts in order to obtain an understanding of psychological time. Generally Piaget [1969] states that the development of psychological time does not occur in discrete identifiable steps but is more continuous in nature. Using several simple experiments, Piaget does identify some of the



restrictions of cognitive development on personal time perspective at various ages. He questions children about their ages and their families ages and also about their inner experiences of timed events. In relating this to personal time perspective, three stages of comprehension can be described even though they are not independent. Youngest children (under six years old) are restricted through their egocentrism and the irreversibility of their thought. They equate age with size and yet deny that anyone existed before them. Older children (six to eight years old) relate time with introspective feeling. Past events are shorter because they feel shorter since they are gone. Time becomes equated with the effort the child displayed for an event. Finally, children over eight years old can become external observers and order events without reference to their own feelings or perceptions. Since personal time perspective deals with the relative importance of events for the individual, it seems that the only age at which there may not be any temporal perspective is the youngest one as the youngest children cannot even put themselves into the past due to the irreversibility of thought. Children at stage two may have difficulty but they can at least base judgments on their feelings. Finally after age eight, most children should be able to cognitively distinguish the relative importance of the various time domains.

#### Literature Review

Relatively few studies are available on the development of personal time perspective and several limitations restrict the generalizability of those available. First, definitional problems and inconsistencies have led to varied and seemingly unrelated measurement techniques. Second, measurement techniques previously utilized have not functionally

incorporated any element of personal importance to the events. Thus even though the measurement technique may be valid, in and of itself, it is not in accord with the conceptualization of personal time perspective presented here. Third, studies conducted with persons under age 20 have included only one or two age points. Therefore if a developmental trend is to be ascertained, data from different subjects, collected at different times by different techniques must be compared. With these limitations in mind, a brief review of previous work is presented in the hopes that some consistencies may be noted.

LeBlanc [1969] studied children (mean age 10.8), adolescents (mean age 14.6), collegiates (mean age 20.2), businessmen (mean age 45.6), and senior citizens (mean age 74.2). Using a story-telling technique in which stories told by the subject were evaluated for time orientation, he found that children tended to write least about the future, adolescents more and collegiates the most. Businessmen showed the second lowest degree of future interest. Senior citizens demonstrated as much future orientation as adolescents. Thus there seemed to be an increase in future-orientation at least up to some age between 20 and 45.

Bain [1971] studied children in second and fifth grades utilizing the Time Concept Battery, an instrument attempting to evaluate an individual's understanding of various time concepts. He found that older children demonstrated greater understanding of time perspective related concepts (past, present and future).

Cottle, Howard and Pleck [1969] studied adolescent perceptions of time in two age groups (under fifteen and over fifteen). They used four instruments--an experiential inventory asking Ss to list the ten most important events in life; a money game in which Ss can, in fantasy, purchase time; a duration inventory in which Ss are requested to bracket

the three domains of time; and the Circles Test in which Ss draw a circle to represent the past, the present, and the future. Relative strengths of the three domains are determined by the frequency or magnitude of the representations of each area. Although they found varying results across instruments, several consistencies were noted. Younger people were preoccupied with the immediate past and present, and they had not developed a sense of extended future. Older respondents demonstrated greater temporal relatedness among the past, present, and future. Sex differences interacted with class differences. Middle class girls and upper class boys were more concerned with the past and viewed the present and the near future as overlapping. This is explained in terms of each group's connection with the past--middle class females through the "glories of motherhood" and upper class males through historical genealogy. Overall a "transition from early to middle adolescence means a shift from recall to expectation" [Cottle, Howard and Pleck, 1969, p. 649].

Cottle and Pleck [1969] used another projective technique, the Lines Test, in which Ss are shown a line representing time and asked to draw sequentially three slashes representing now, birth, and death, respectively. Relative importance of each time domain is determined by line length. They found results similar to Cottle, Howard and Pleck [1969] in that middle class females and upper class males are more past oriented than middle class males and upper class females. This technique also demonstrated an increase of future perspective as subjects became older.

Wohlford and Herrera [1970] used a story-telling technique to compare time perspective between Cuban and American children. They found that there was a general increase over age for retrotension (backward

perspective) and for protension (forward perspective). Sex differences were observed in retrotension, with females having longer past extension. Thus the developmental trend here is merely an increase in perspective for past and future.

Lessing [1968] studied future time perspective in fifth, eighth and eleventh grade subjects. She used length of future time span over which future events could be conceptualized as a theoretical definition of future time perspective and measured this construct using an event reporting technique, a sentence completion test and a story completion test. She found that longer future time perspective was always associated with more culturally favorable attributes such as higher intelligence, higher academic achievement, higher socioeconomic status and healthier personality test scores. These findings were variable across instruments. She found no overall developmental trends and concludes that sheer length of future time perspective is not a critical developmental variable and that a multidimensional approach to future time perspective is needed.

In a more recent study, Lessing [1972] distinguishes two types of personal future time perspective. Cognitive future time perspective is merely the time span over which personal future images are projected. Cognitive-motivational future time perspective is not only this time span but also the extent to which there is motivation to give priority to long-range plans. Cognitive future time perspective was measured by the events test and incomplete sentences test. Cognitive-motivational future time perspective was measured by a future time perspective inventory which is a series of statements about the predictability and controllability of the future. For example, "I can't even imagine what my life will be like in twenty years." The results indicated that cognitive

future time perspective actually decreases with age, possibly due to the shorter distance to the event of older Ss and to the greater realism of older Ss. Cognitive-motivational future time perspective, however, does increase between ages nine to fifteen for females. Thus there is an increased motivation for control in the future and a decreased time span using personal expectancies of future events.

Kastenbaum [1959] in a study of high school juniors found that they had many expectations for the next few years of life but considered few events possible after age twenty-five. Further, these adolescents were quite restricted in past time perspectives. Thus youth of this age have complex future time perspectives for a brief time span but have little use of past events. However, Kastenbaum [1964] did find that the more intelligent students were more likely to extend into the past than those of lesser intelligence (as measured by intelligence tests). Kastenbaum [1959] suggests that one of the developmental tasks of adolescence is to incorporate the past into one's personal time perspective.

In reviewing these studies which have dealt with personal time perspective in children and adolescents, it becomes difficult to view developmental trends. LeBlanc [1969], Bain [1971], Cottle, Howard and Pleck [1969], and Kastenbaum [1959, 1964] find that there is a developing extension of future perspective. Wohlford and Herrera [1970] found no trend at all. Lessing [1972] states that developmental literature is clarified with the distinction between cognitive future time perspective and cognitive-motivational future time perspective. Cognitive future time perspective undergoes a decrease and cognitive-motivational future time perspective an increase over time. In spite of the various measurement techniques used, it seems likely that when considering span of

events, that there is an increase in future time perspective with age. Kastenbaum's data suggest that there is an increase in past time perspective also.

Several studies have attempted to study sex differences in personal time perspective. Bortner and Hultsch [1972] using Cantril's ladder technique found no differences between males and females. Davids, Kidder and Reich [1962] found no sex differences in male and female delinquents using a story completion test. Platt, Eiseman, and DeGross [1969] found that females had a significantly greater future time perspective than males in both a personal and a historical sense. This effect was caused by an interaction with birth order with first and only born females having the greatest future time perspective. Cottle, Howard and Pleck [1969] found an interactive effect of sex and class reported above. Thus it seems that differences between males and females are not common although, when reported, support the idea that females have a greater future time perspective than males.

Summary. Personal time perspective literature is limited due to various methodological and theoretical discrepancies. However, it seems that relatively consistent evidence supports the idea of an increase of future time perspective with an increase in age. Although not as much data is available it seems that there is a corresponding increase in past time perspective. The present has not been studied. Finally sex differences are not great although females may have greater future time perspectives than males.

#### Personal Space and Personal Time Perspective

One study has been done attempting to relate personal space and

personal time perspective. Tolor, Brannigan and Murphy [1972] used a figure placement technique to measure psychological distance which they define as "variations in desired intimacy or isolation with respect to specific others." The Future Events Test a paper and pencil technique which asks Ss to estimate the age at which various events will occur was the measure of personal time perspective. Tolor et al. compared Ss with close psychological distances (CPD) to Ss with remote psychological distances (RPD) on the mother and father stimulus items. They found that on a significant number of items both males and females with CPD evidenced a greater future time perspective. However, CPD females endorsed more realistic achievements (i.e., being a leader) than CPD males. In fact, CPD females were most similar to RPD males on these measures. It seems that both males and females with small personal spaces have extended future perspectives. However, CPD females are more realistically oriented than CPD males. Perhaps it is not a "manly" characteristic to be close to mother and father and the more "properly" socialized males are actually the RPD. This is merely a conjecture, but if true males would be expected to have larger personal spaces and smaller future time perspectives than females. The Tolor et al. study suggests that persons with small personal spaces have large future time perspectives. Past time perspective was not considered.

#### Theoretical Framework

Several theoretical frameworks seem applicable in dealing with the developmental progression of personal space and personal time perspective. Cognitive developmental theory and social learning theory both are

appropriate in dealing with these phenomena. Piaget's cognitive theory and Rotter's social learning theory are briefly described below in reference to personal space and personal time perspective. However, the theoretical derivation of the hypotheses has been drawn specifically from Rotter's social learning theory rather than from Piaget's conceptual framework for several reasons. First, a social learning theory approach seemed to account more adequately for previously observed class, race and sex differences in personal space and personal time perspective. Second, previous research has demonstrated that personal space can be changed through a modeling process [Bailey, Hartnett and Glover, 1973]. A similar modeling process may cause differences between delinquents' and non-delinquents' personal time perspective [Stein, Sarbin, and Kulik, 1968]. Third, although Piaget's cognitive theory of development can adequately explain the development of physical concepts of space and time, it cannot adequately account for personal usages of the space and time dimensions as examined in this paper. The author does not deny the relationship between the physical and personal concepts of space and time, but is limiting the scope of the present paper to deal only with the personal usages. These personal concepts are obviously influenced by the socialization system in which the individual exists. Finally, social learning theory is adopted because the author is more knowledgeable in that area.

#### Piaget's Theory of Cognitive Development

Briefly Piaget's theory [1952] utilizes a stage process, that is, the child develops cognitively by progressing through a series of stages. As he moves from one stage to another, the child acquires the ability to



see the world in new ways. The progression of the child in terms of personal time perspective has been described above (see Personal Time Perspective--Influence of cognitive development). A similar attainment of spatial concepts occurs. The young child has difficulty taking the point of view of another person and thus has an egocentric view of space. Spatial relationships are limited to the child's own perspective. In terms of personal space, this may mean that he does not take the other person into consideration in establishing an appropriate distance. The concretely operational child can form mental representations and is able to understand relationships in space. This age child also should have an established personal space size in relation to persons with whom he has interacted. He has learned to order relationships and should therefore be able to interact at a different distance with different persons. Attainment of the last stage, formal operations, gives the child the skill to consider all possibilities of solutions to a particular problem before acting. In terms of personal space this age child would be able to formulate appropriate personal space size in relation to a person with whom he had not previously interacted.

The major limitation of this approach in a developmental study of personal space and personal time perspective is that it deals most specifically with the acquisition of physical concepts. Although it has been briefly applied to personal time perspective, it has not been applied to personal space. Because of the lack of information about the connection between physical and personal usages of space and time, the author believes the use of a physically based approach in a study of the personal use of space and time would equate the physical and personal interpretations prematurely. More research is needed before this juxtaposition is feasible.

### Rotter's Social Learning Theory

Several lines of evidence suggest that personal space is a socially learned phenomenon. That personal space is learned is demonstrated by the fact that personal spaces are different in different cultures [Sommer, 1969]. Further, Sommer [1969] cites evidence from animal literature that animals deprived of contact with their own kind cannot learn proper spacing and cannot functionally interact with their own species. Bailey, Hartnett and Glover [1973] have demonstrated that children model personal space behavior in an experimental situation. Finally the literature shows prevalent sex differences in personal space, with females having smaller spaces. Role differences accorded to females, such as greater intimacy and desire for social contact are in keeping with this finding.

Similar evidence is available to demonstrate that personal time perspective is acquired through the socialization process. Cultural differences in time extension and relatedness have been observed [Bongers, 1972; Wolk, 1971]. Class differences have been found also [Cottle, Howard, and Pleck, 1969; Leshan, 1952] with middle class Americans having large future time perspective, lower class Americans concerned with the present and upper class Americans demonstrating past dominance. These class differences are in accord with proper learning of one's position in society. The middle class has high achievement orientation and looks to the future for attainment of goals, the lower class is concerned with survival in the present and the upper class is steeped in the preservation of tradition and family lineage. Similarly male delinquents have small future time orientations when compared to non-delinquents, presumably because the future is not a realistic concern for them [Stein et al., 1968; Brock and Del Giudice, 1963; Davids, Kidder and Reich, 1962].

Further, emotionally disturbed persons have been shown to have restricted future time perspectives [Shybut, 1968; Davids and Parenti, 1958]. Presumably emotionally disturbed people have had difficulty learning and accepting the socially required norms.

Since personal space and personal time perspective are learned phenomena, social learning theory seems applicable. Rotter's [1966] social learning theory has been well delineated. It suggests that the behavior of any person is determined not just by the goals or reinforcements available, but also by the individual's expectancy of receiving that reinforcement. These individual expectancies are influenced by the past reinforcement history of the person. Further, no behavior occurs in a vacuum but is constantly being changed by situational variables. Rotter states [1972] that it is possible to identify and quantify similarities and discrepancies across situations so that behavioral predictions can eventually be made.

These ideas are conceptually united in the following formula:

$$BP_{x,s_\ell,r_a} = f(\epsilon_{x,r_a,s_\ell} \text{ and } RV_{a,s_\ell}), \quad (1)$$

where  $BP_{x,s_\ell,r_a}$  = behavior potential for behavior "x" in situation " $\ell$ " with reinforcement "a,"

$\epsilon_{x,r_a,s_\ell}$  = expectancy that behavior "x" will yield reinforcement "a" in situation " $\ell$ ," and

$RV_{a,s_\ell}$  = reinforcement value of "a" in situation " $\ell$ ."

That is, given situation " $\ell$ " and reinforcement "a" the potential for behavior "x" to occur is a function of the expectation the individual has for receiving reinforcement "a" in situation " $\ell$ " and also the value that reinforcement "a" has for the individual in situation " $\ell$ ." The

expectancy of the person is determined by his reinforcement history in same and similar situations with positive reinforcements strengthening expectancies of obtaining further positive reinforcement. Generalization gradients of reinforcement account for the variability of reinforcement values.

Rotter [1972] asserts that initially psychological needs are learned from the consequences of internal sensory stimulation, i.e., hunger. However, as the child matures, the strength of his needs and thus values of reinforcements are better predicted from his psychological needs than primary drives. Environmental cues become more critical in eliciting appropriate behaviors. Thus in social learning theory the situation serves as a cue to elicit appropriate expectancies which in turn result in particular behavior potentials for any one situation.

Locus of control was conceptualized by Rotter [1966] as a measure of a general expectancy across situations.

When a reinforcement is perceived by the subject as following some action of his own but not being entirely contingent upon his action, then, in our culture, it is typically perceived as the result of luck, chance, fate, as under the control of powerful others, or as unpredictable because of the great complexity of the forces surrounding him. When the event is interpreted in this way by an individual, we have labeled this a belief in external control. If the person perceives that the event is contingent upon his own behavior or his own relatively permanent characteristics, we have termed this a belief in internal control [Rotter, 1966, p. 1].

These generalized expectancies also mediate the resultant behavior potential in any situation.

### Derivation of Hypotheses

#### Personal Space

In terms of a developmental study of personal space, the expectancy of reinforcement for a young child in any situation is unclear. At first there is no baseline of experience on which the child can rely. He<sup>1</sup> is, however, dependent on parents and other adults for satisfaction of primary needs such as hunger and thirst. These needs are generally fulfilled by another person operating at a close distance. Thus initially there would be positive reinforcement for a small personal space. As the child grows older he will come to depend on situational cues to elicit appropriate expectancies. Also, there will be an increasing need for individual autonomy and independence [Beller, 1955]. The child will experience positive reinforcement for larger personal space and negative reinforcement for close personal space in various inappropriate situations. For example, a child upon entering school will receive more and more negative reinforcement for clinging to his mother. Similarly the child will observe other individuals interacting and learn vicariously through their experiences. Thus as the child becomes increasingly more independent from his parents, he will learn to expect positive reinforcement for a larger personal space.

At approximately age eight, a child becomes interested and concerned with peer relations [Campbell, 1964]. To establish and maintain friendships, he makes increasingly more and closer contacts. A need for people raises the reinforcement value of small personal spaces. Personal

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<sup>1</sup>The author recognizes that these hypotheses apply to males and females. For purposes of consistency and simplicity, masculine pronouns are used since they are shorter.

space size should now decrease until it becomes more similar to cultural, class and family models. Thus, personal space should decrease after age eight until it reaches a stable size.

Further, since the child gains more accurate expectancies of reinforcements in dealing with particular situations and particular persons, his personal space behavior should become less variable as he tries to obtain maximum reinforcement.

In the American culture as the child reaches adolescence, he becomes concerned with dating and the opposite sex [Douvan and Adelson, 1966]. There is a corresponding concern in this society that same-sex relations are only friendly in nature. It becomes more permissible to maintain a close physical relationship with a member of the opposite sex. Thus at this age, there is an increase in positive reinforcement for close interpersonal distance with the opposite sex and an increase in negative reinforcement for close distancing behavior with respect to the same sex, resulting in a change in expectancy. There is also an internal change in the reinforcement value of opposite sex relations deriving from physiological changes. Thus with the advent of puberty there is a change in the personal space behavior in relation to opposite sex members, with an increased expectancy for positive reinforcement and an increased value for such reinforcement for a small personal space. There is a corresponding increase in personal space size in relation to same sex members.

Males and females should develop different reinforcement histories as male appropriate and female appropriate behaviors tend to be different in terms of role definitions [Mischel, 1966]. In particular, females are reinforced for developing and maintaining skill in interpersonal relationships. Thus females would receive more positive reinforcement than males

for small personal space. Similarly, they would be negatively reinforced for behaviors maintaining large social distances. Overall, females should evidence smaller personal spaces than males due to differential expectancies of reinforcement. Further, the ban for same-sex relations at puberty is not instilled in females as much as in males. A characteristic of the female role is to be interpersonally adept with women as well as with men. Men, however, cannot be too intimate with other men. Reinforcement histories differ and therefore, females should have smaller personal spaces in relation to same-sex friends and relatives than men do.

Rotter's measure of generalized expectancy, locus of control, has been demonstrated to serve as a mediator in interpersonal distancing responses [Tolor, Brannigan and Murphey, 1970; Tolor and Jalowiec, 1968; Duke and Nowicki, 1972]. Internals have smaller personal spaces perhaps because of their ability to control the consequences of behavior. Externals, comparatively, feel that luck and fate control events and thus maintain a larger interpersonal distance in order to be able to perceive sudden changes in events. Duke and Nowicki [1972] found that a priori predictions based on locus of control measures were supported. Internals placed authoritarian figures much closer than externals (stimulus persons were policeman, president, and professor). For stimulus persons of mother and father, where specific expectancies have been learned by both internals and externals, no differences were found. Thus generalized expectancies of reinforcement do have an effect on personal space size in situations in which no specific expectancies had previously been generated.

### Personal Time Perspective

Similar developmental learning may occur in the acquisition of personal time perspective. At first, the child cannot distinguish past, present and future but is taught these basic concepts through socialization by others [Stone and Church, 1973]. Further, since temporal concepts are not concrete, the child must attain a certain level of cognitive development before he can begin to comprehend the existence of past and future [Piaget, 1969]. As the child learns to understand these abstractions, he will also begin receiving various reinforcements for emphasizing each domain. For example, a young child may learn the importance of the short term future by having to wait until tomorrow or wait until his father/mother comes home. He will learn of the past by retelling events that happened or merely from the influence of memory. At first the child will learn of the past and emphasize that domain although both past and future perspectives will undergo an increase. During adolescence, when most children are positively reinforced for making future vocational plans [Witty, 1961], there would be a corresponding increase in future perspective.

Vicarious reinforcement, through observation of parents, plays a critical role in the development of temporal perspective, particularly future time perspective. If the child's parents do not emphasize the valued reinforcements which can be obtained in the future, then the child will not expect any future gains. For example, lower classes have shorter future time perspectives because the parents have gained nothing from their future. Contrastingly the middle class child hears tales of young men with lots of money, expensive cars and advanced educations who were poor in their childhood. The future is the time for achievement



fulfillment. Whereas in personal space development the child can experience reinforcements, in personal time development all he can experience is the present and the past; the future is demonstrated by others. Thus time perspective may develop in a child to correspond to similar time perspective schemes of available models, particularly futuristic references.

Males and females may learn different time perspectives as they will be differentially affected by male and female models. For instance, according to stereotyped role conceptions, a woman is fulfilled by her children's attainments and a man by his own. Therefore, females may be more future oriented as their goals are displaced further in time but presumably not in importance. This difference may be diminished by the increasing equality in male and female roles.

#### Personal Space and Personal Time Perspective

As the child is learning appropriate personal space and personal time perspective behaviors and attitudes, he is learning a general approach toward others. If one asserts that personal space and personal time perspective are subjective uses of the two dimensions of behavior then one can assume a general connection between the two. Both personal space and personal time perspective are, in essence, means of connection or communication between people. Personal space size obviously affects interpersonal communication. Persons in intimate relationships stand closer to each other than persons who are strangers. Females who are trained to be socially responsive have smaller personal spaces than males who are trained to be task oriented. Perhaps personal space size varies as a function of need for contact with others or a greater desire for increased personal relationships. One can extend ones behavior not just

in terms of space, but also in terms of time. Therefore extended personal time perspective allows a person to have more contact with others by remembering previous events and planning future ones. Greater importance of events and length of time spans incorporating such events permit the individual to gain more intimacy with others. Thus greater personal time perspective, particularly past and future perspectives, also seems related to a greater desire for interpersonal communication. It appears that as the child grows, he acquires a need for a unique amount of attachment toward others or a unique degree of sociability. Thus not only does he learn personal space and personal time perspective norms but a more general norm which relates these two dimensions. This suggests that persons with characteristically small personal spaces will have greater personal past and future time perspectives. Similarly persons who cannot extend their relationships into past and future time domains will also have difficulty in maintaining close personal spaces. Therefore an individual with a large present time perspective would have a large personal space.

Further, it can be suggested that adolescents who have received great positive reinforcement from their relationship with their parents, and who, therefore, have small personal spaces in relation to their parents, will be more past oriented than adolescents who have large individual distance from their parents. A large past time perspective would serve to maintain the close relationship.

Similarly, persons who have small personal space in relation to their current friends will be more likely to have greater present time perspectives than persons who remain interpersonally distant from their friends. Again personal time and space serve to unite the individual with his preferred others.

### Summary of Hypotheses

More specifically, based on social learning theory and previous research, the following hypotheses were investigated:

1. Personal space size, as determined by averaging all measures, increases up to approximately age 8-10 and decreases thereafter until it reaches a stable size.

2. Variance in personal space size with respect to any particular stimulus person decreases with age as the appropriate distancing norms are learned.

3. Personal space in relation to same sex persons increases after puberty while personal space in relation to opposite sex persons decreases.

4a. Females have smaller average personal spaces than males, particularly after puberty.

b. Females have smaller personal space in relation to same sex friends and relatives than males.

5. Past and future time perspectives increase with age. At first a child increasingly emphasizes the past, then in adolescence future time perspective increases more rapidly and to a greater extent than past time perspective.

6. After puberty, females have greater future time perspectives than males.

7. Persons with large average personal spaces have larger present time perspectives than persons with small average personal spaces.

8. There is a negative correlation between average personal space size and future time perspective.

9. Adolescents with small average personal spaces in relation to parents will have larger past time perspectives than adolescents with large personal spaces in relation to parents.

10. Persons with small personal spaces in relation to friends have greater present time perspectives than persons with large personal spaces in relation to friends.

## CHAPTER II

### METHOD

#### Sample Selection

##### Subjects

Twelve white male and twelve white female Ss at each of five different age levels (three, seven, eleven, fifteen, nineteen) were studied for a total of 120 Ss. The mean age of each group of Ss is presented in Table 1. The three year olds were recruited from waiting lists for enrollment at P. K. Yonge, an experimental school affiliated with the University of Florida. The seven, eleven, and fifteen year olds were selected from current enrollment listings of the P. K. Yonge school. Six of the nineteen year olds (four males and two females) were volunteers who had graduated from P. K. Yonge and were still residing in the area. The other eighteen were recruited from introductory psychology courses at the University of Florida.

##### Socioeconomic Status

The middle three age groups were matched across sex and age groups on socioeconomic status (SES) as measured by family income. This information is obtained as part of the application for admission to the laboratory school. Five SES groups were arbitrarily defined by the school officials. They are: under \$3,000, \$3,000 - \$5,999, \$6,000 - \$8,999, \$9,000 - \$12,999, and \$13,000 and over. Table 2 contains the income distribution for these age groups.

TABLE 1

Mean Age and Standard Deviation  
in Years of Ss at Five Ages

| Sex    | Statistic | Age  |      |       |       |       |
|--------|-----------|------|------|-------|-------|-------|
|        |           | 3    | 7    | 11    | 15    | 19    |
| Male   | $\bar{X}$ | 3.63 | 7.40 | 11.05 | 15.34 | 19.64 |
|        | SD        | .62  | .61  | .64   | .67   | .50   |
| Female | $\bar{X}$ | 3.72 | 7.15 | 11.11 | 15.25 | 19.23 |
|        | SD        | .38  | .64  | .46   | .37   | .74   |
| Total  | $\bar{X}$ | 3.67 | 7.27 | 11.08 | 15.30 | 19.43 |
|        | SD        | .50  | .62  | .54   | .53   | .65   |

TABLE 2

The Income Distribution of Seven, Eleven and Fifteen Year Old Male and Female Ss based on the First SES Ranges

| Age      | Sex    | Income Level |             |             |               |                   |
|----------|--------|--------------|-------------|-------------|---------------|-------------------|
|          |        | Under \$3000 | \$3000-5999 | \$6000-8999 | \$9000-12,999 | \$13,000 and over |
| 7        | Male   | 3            | 4           | 3           | 1             | 1                 |
|          | Female | 2            | 5           | 3           | 1             | 1                 |
| 11       | Male   | 3            | 5           | 1           | 2             | 1                 |
|          | Female | 3            | 4           | 3           | 1             | 1                 |
| 15       | Male   | 4            | 3           | 3           | 2             | 0                 |
|          | Female | 3            | 4           | 3           | 1             | 1                 |
| Subtotal | Male   | 10           | 12          | 7           | 5             | 2                 |
|          | Female | 8            | 13          | 9           | 3             | 3                 |
| TOTAL    |        | 18           | 25          | 16          | 8             | 5                 |

An attempt was made to recruit three year old Ss who matched the other Ss on the parental income measure. However, the school officials had changed the ranges of incomes specified for their different levels of SES and did not advise E until the sample had been obtained. These new ranges are: under \$5,000, \$5,000 - \$8,699, \$8,700 - \$12,399, \$12,400 - \$18,599, and \$18,600 and over. New SES scores were then obtained for the other three age groups and Table 3 presents the income distribution in the new ranges for all age by sex groups. Because of this difficulty, groups are not completely matched, although all levels are used in all age by sex groups with the preponderance of Ss being from the middle to upper income levels.

The nineteen year olds claimed to be self-supporting as they were in college but an estimate of parental income was obtained by telephone after the interview in order to compare their family's SES to the other four age groups. Table 3 gives the income distribution of this age group also.

### Instruments

#### Personal Space

Four measures of personal space were used. These measures were chosen for several reasons. First, previous research has used only one instrument at a time for assessing personal space. As a result, different findings have been obtained, possibly due to the method specific nature of the research. Thus several assessment techniques were chosen to investigate the relationship between measures and to make the present findings more generalizable. Second, these particular measures were



TABLE 3

The Income Distribution of All Age by Sex Groups based on  
Current SES Ranges

| Age      | Sex    | Income Level    |                 |                   |                     |                      | Unavailable |
|----------|--------|-----------------|-----------------|-------------------|---------------------|----------------------|-------------|
|          |        | Under<br>\$5000 | \$5000-<br>8699 | \$8700-<br>12,399 | \$12,400-<br>18,599 | \$18,600<br>and over |             |
| 3        | Male   | 2               | 7               | 1                 | 1                   | 1                    | 0           |
|          | Female | 2               | 7               | 1                 | 2                   | 0                    | 0           |
| 7        | Male   | 3               | 3               | 3                 | 2                   | 1                    | 0           |
|          | Female | 4               | 3               | 3                 | 1                   | 1                    | 0           |
| 11       | Male   | 3               | 5               | 3                 | 1                   | 0                    | 0           |
|          | Female | 1               | 4               | 3                 | 3                   | 1                    | 0           |
| 15       | Male   | 4               | 3               | 3                 | 2                   | 0                    | 0           |
|          | Female | 3               | 4               | 3                 | 1                   | 1                    | 0           |
| 19       | Male   | 0               | 2               | 1                 | 4                   | 1                    | 4           |
|          | Female | 0               | 1               | 1                 | 5                   | 3                    | 2           |
| Subtotal | Male   | 12              | 20              | 11                | 10                  | 3                    | 4           |
|          | Female | 10              | 19              | 11                | 12                  | 6                    | 2           |
| TOTAL    | Male   | 22              | 39              | 22                | 22                  | 9                    | 6           |
|          | Female |                 |                 |                   |                     |                      |             |

included to represent basic types of instruments commonly used. Thus paper and pencil, simulation and behavioral observation measures are included. Further, two types of instructions were used depending on the instrument--one specifying comfort and the other just placement. Again this was done in order to assess whether discrepancies in previous research were caused by methodological differences.

The first was a paper and pencil test designed by Duke and Nowicki [1972]. Ss imagine they are standing in the center of a large room graphically represented on paper. Lines forming various angles with a horizontal axis are also depicted on the instrument. Ss indicate at what distance they would feel uncomfortable when various stimulus persons approach along randomly selected axes. Figure 1 gives an example of this task. This measure was completed for the following ten stimulus persons: best female friend, mother, sister, female stranger, saleslady, best male friend, father, brother, male stranger and mailman. Five stimuli are female and five male at various degrees of intimacy to S.

This instrument yielded several indices of personal space. First, the distance to each stimulus person, or the measure of interpersonal distance, was used as indicative of personal space toward that particular stimulus person even though only one point on the boundary was measured. Second, a mean personal space measure was derived for familiar (friend or relative) vs. unfamiliar stimulus persons (stranger or worker). Third, a mean score was computed for male vs. female stimulus persons. Then these composite measures were combined to obtain a mean score for male and female familiar and unfamiliar stimulus persons yielding four more indices of personal space: familiar male personal space, unfamiliar

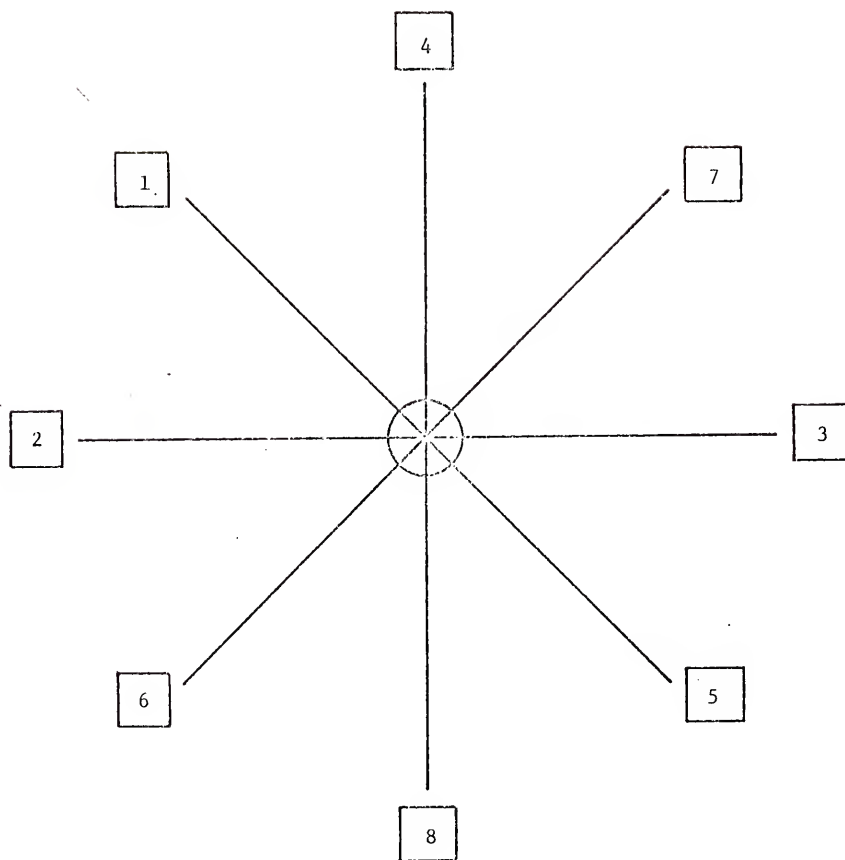


Figure 1. THE PAPER AND PENCIL PERSONAL SPACE MEASURE  
[Duke and Nowicki, 1972]

male personal space, familiar female personal space and unfamiliar female personal space. Finally, a composite measure of personal space was derived by calculating the mean distance of approach for all stimulus persons.

The second instrument was a simulation technique. Ss were requested to place 2 1/2 by 5 1/4 inch yellow felt figures representing various stimulus persons on a 16 1/2 by 24 inch green felt board which already held a similarly shaped figure representing S. However, figures representing S were marked with a green triangle on the trunk of the figures' body. Examples of the stimulus figures can be seen in Figure 2. Stimulus persons were described to represent persons identical to those used in the paper and pencil technique above. A plastic overlay divided into quarter inch squares permitted easy recording of the distance between a standard point on the neck of the felt figure representing the subject and a standard point on the neck of the felt stimulus figures. This interpersonal distance was used as a measure indicative of personal space in one direction. Composite indices of personal space identical to those in the paper and pencil task above were computed for this measurement.

The third technique for measuring personal space was behavioral observation. Ss were asked to approach an adult male and an adult female stimulus person until they felt uncomfortable. The same stimulus persons approached each S until S stated he began to feel uncomfortable. One adult male and one adult female served as stimulus persons for all subjects. An observer measured the distance using a plastic multi-colored strip placed along the wall. Thus "approach" and "approached by" measures of actual behavior were obtained in reference to both a same sex and opposite sex adult stimulus person.

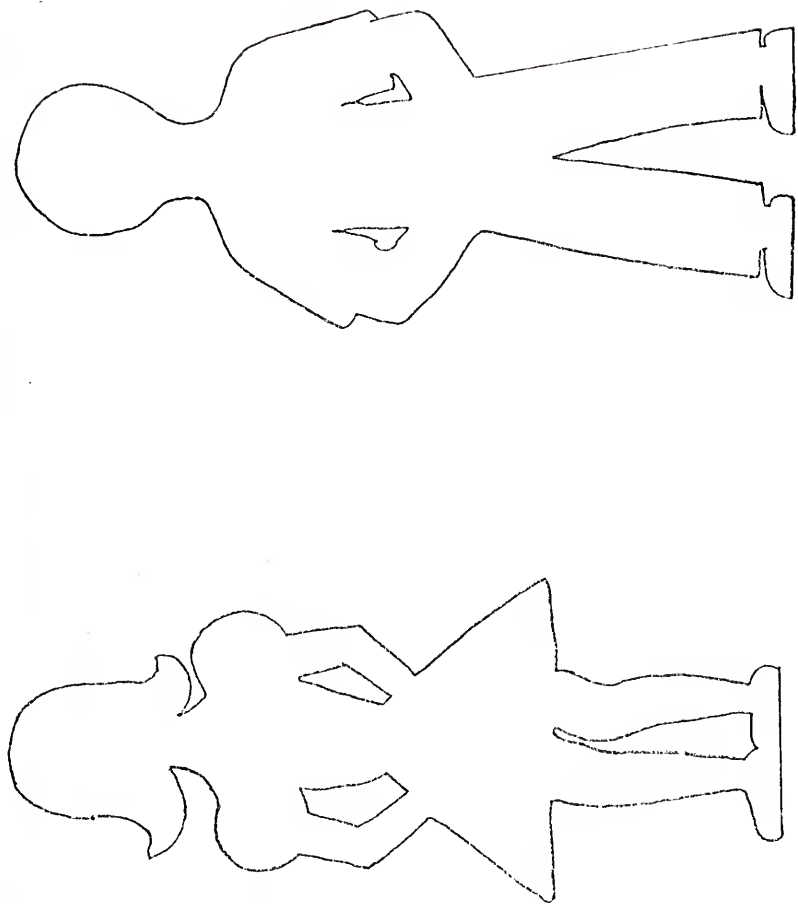


Figure 2. AN EXAMPLE OF THE MALE AND FEMALE STIMULI USED IN THE FELT BOARD TECHNIQUE

Finally, a more unobtrusive measurement was recorded. A row of chairs was placed along one wall of the experimental room and one of the stimulus persons was casually seated in the end chair. At the very beginning of the experimental session Ss were asked to have a seat and wait briefly while E got prepared. After each S was seated the observer simply recorded the number of chairs separating the S and the stimulus person. This measure may be understood more clearly by looking at the schematic diagram of the experimental room in Figure 3.

#### Personal Time Perspective

A multi-method assessment of personal time perspective was viewed as necessary due to the exploratory nature of all measures, none of which had been previously used. Thus three measures were developed attempting to measure personal time perspective.

The primary measure was a self-report technique. Ss were asked to tell the interviewer things that happened to them or that they had done in the past and at what age each event had occurred. After specifying the events and ages, Ss indicated how important each event was to them. This measure of importance was on a scale of one to five with five as very important, four as pretty important, three as somewhat important, two as not very important, and one as not important at all. A similar procedure was completed for the present (things that are happening to you or that you are doing), and the future (things that will happen to you or that you will do). Ss again reported the age and importance of each event mentioned. All interviews were tape recorded and analyzed at a later time.

This interview led to measurement of personal time perspective by combining age of events and the importance of each event in each time

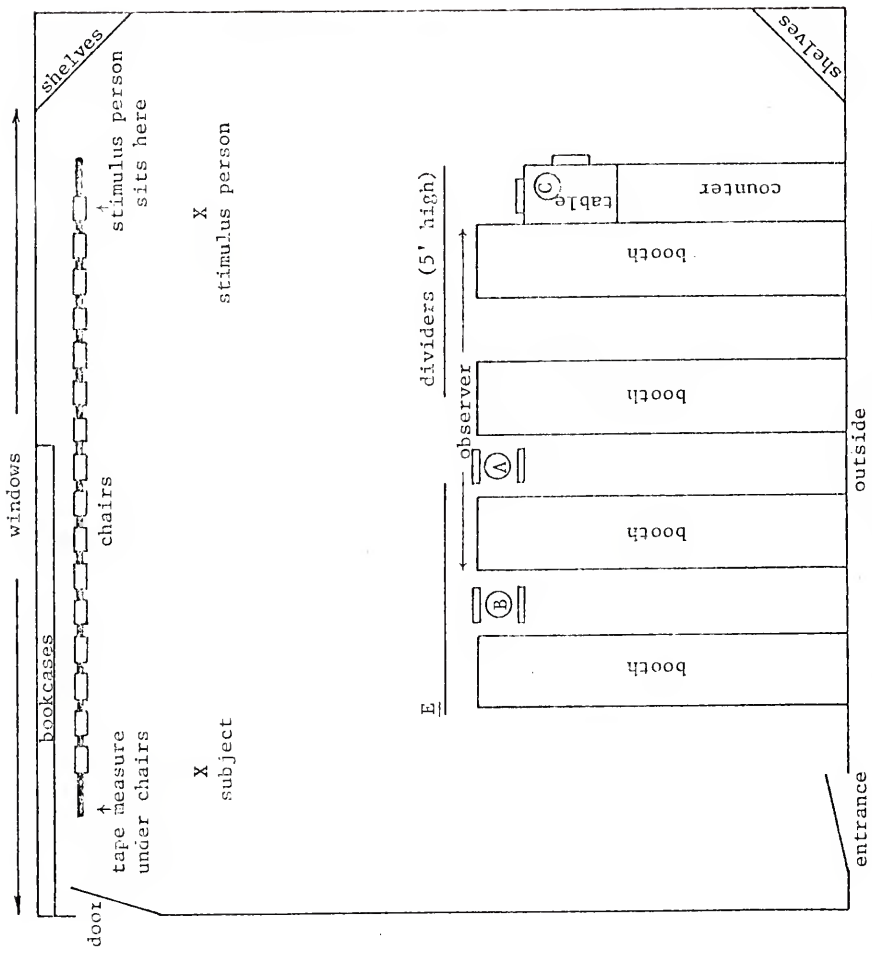


Figure 3. A DIAGRAM OF THE EXPERIMENTAL ROOM

domain (past, present and future). These three measures can be computed as follows:

$$\text{PATP} = \frac{\sum_{e=1}^N (a_p - a_e)(I_e)}{5N} \quad (2)$$

$$\text{PRTP} = \frac{\sum_{e=1}^N (a_e - a_p)(I_e)}{5N} \quad (3)$$

$$\text{FTP} = \frac{\sum_{e=1}^N (a_e - a_p)(I_e)}{5N} \quad (4)$$

where: PATP = past time perspective,

PRTP = present time perspective,

FTP = future time perspective,

N = number of events,

$a_e$  = age of events (months),

$a_p$  = present age (months), and

$I_e$  = importance of events.

Thus, past, present and future time perspectives equal the mean difference between the age of each event and the current age multiplied by the importance of each event to the person. For ease of calculation each score was divided by a constant of five since the value  $I_e$  ranged from one to five. The essential difference is that FTP involves the expected age of future events whereas PATP involves actual age of past events. PRTP has the potential for both past and future events. These three scores were used as individual measures of each time domain.

Two other techniques were used to measure personal time perspective. First, ss completed semantic differential ratings on YOUR PAST, YOUR PRESENT,



and YOUR FUTURE. Seven pairs of referents were used: important/unimportant, good/bad, active/passive, successful/unsuccessful, fast/slow, happy/sad and kind/cruel. The seven year olds and eleven year olds completed these forms using a large chart and responding verbally. The two older groups completed them in the typical written fashion. Appendix A gives examples of this task.

Finally, Ss responded verbally to a series of eight questions concerning time domain desirability using common language terms; for example, what do you think is the best age to be? All items could be answered as showing preference for either the past, present or future. Ss were given points in each time domain equal to the number of answers preferring that time zone. The time area with the largest score thus was considered the preferred time domain for that S.

### Design

A small number of preliminary five year old Ss were investigated to determine the practicality of the use of both the personal space and the personal time perspective measures in very young children. After viewing twelve Ss who had difficulty in understanding the instruments, it was decided to change the design for this age group in order to obtain as much information as possible without undue difficulty or frustration. Thus the following designs resulted.

#### Standard Design

Subjects of four age groups (seven, eleven, fifteen, nineteen) were given the instruments in a randomly chosen balanced order so that half of

the Ss received the personal time questions (TIME) first and half received the personal space (SPACE) measures first. The seven, eleven and fifteen year olds were tested on two different days. The nineteen year olds underwent both parts of the experiment on the same day but again half of this age group received TIME first and half received SPACE first.

Within this balanced order, the personal space instruments were administered in the following order. All Ss received the behavioral measures first as this was the measure most similar to everyday situations. The sex of the stimulus person to be approached first was randomly selected at the beginning of each day of testing. The first subject on each day met the same or opposite sex person as chosen. The sex was changed after each S for that particular day. Ss were approached by and then approached a male and a female stimulus person.

Following the behavioral measure half the subjects completed the Duke and Nowicki [1972] paper and pencil instrument first, and half completed the felt board measurements first. Ss received male and female stimuli for these instruments in the same order that was randomly chosen for the behavioral measure. Therefore Ss who were approached by a male first also completed both simulation measures first for males and then for females.

Thus four main orders of item administration resulted for the four oldest age groups: two receiving the time measures first and two receiving the space measures first. They are: TIME, felt board, paper and pencil; TIME, paper and pencil, felt board; SPACE, felt board, paper and pencil; and SPACE, paper and pencil, felt board. Within these orders, sex of the stimulus person presented first was randomly varied.

### Three Year Old Subjects

The three year old subjects did not receive the behavioral measure of personal space. Most of them were afraid of the strange situation and the strange stimulus person. In order to alleviate this fear so that these Ss would complete the other measures of personal space, the behavioral measure was eliminated. Further, the interview measure and semantic differential of personal time perspective were also excluded as these Ss were unable to answer any of the relevant questions. Ss still received the eight time related questions. In order to further maintain their interest, all Ss were given the personal space measures first, then the time questions. Thus half the three year olds were in the personal space, paper and pencil, felt board condition and half were in the personal space, felt board, paper and pencil condition.

### Experimenters

Three female experimenters conducted all sessions. No single experimenter ran all Ss in any age by sex by order group. To control for possible interviewer effects, an attempt was made to have one experimenter administer the TIME measures to approximately half the Ss of each age by sex group and the other two experimenters each administer a fourth. However, due to scheduling difficulties, this was not entirely possible for the three and nineteen year old groups. Table 4 gives the frequency of TIME interviews by experimenter for each age by sex group. As the personal space measures are standard instruments with specific instructions, experimenter effects were not expected to be as great as the TIME interview. Ss were therefore tested as convenience permitted. Table 5 gives the frequency of SPACE interviews by experimenter for each age by sex group.

TABLE 4  
 The Frequency of Time Interviews per  
 Experimenter for Each Age by Sex Group

| Sex    | Interviewer | Age |    |    |    |    |
|--------|-------------|-----|----|----|----|----|
|        |             | 3   | 7  | 11 | 15 | 19 |
| Male   | A           | 9   | 6  | 7  | 6  | 5  |
|        | B           | 3   | 3  | 3  | 3  | 5  |
|        | C           | 0   | 3  | 2  | 3  | 2  |
| Female | A           | 7   | 7  | 6  | 6  | 5  |
|        | B           | 3   | 3  | 3  | 3  | 4  |
|        | C           | 2   | 2  | 3  | 3  | 3  |
| Total  | A           | 16  | 13 | 13 | 12 | 10 |
|        | B           | 6   | 6  | 6  | 6  | 9  |
|        | C           | 2   | 5  | 5  | 6  | 5  |

TABLE 5  
 The Frequency of Space Interviews  
 per Experimenter for Each Age by Sex Group

| Sex    | Interviewer | Age |    |    |    |    |
|--------|-------------|-----|----|----|----|----|
|        |             | 3   | 7  | 11 | 15 | 19 |
| Male   | A           | 9   | 3  | 2  | 7  | 5  |
|        | B           | 3   | 6  | 6  | 4  | 5  |
|        | C           | 0   | 3  | 4  | 1  | 2  |
| Female | A           | 7   | 5  | 6  | 4  | 5  |
|        | B           | 3   | 4  | 5  | 6  | 4  |
|        | C           | 2   | 3  | 1  | 2  | 3  |
| Total  | A           | 16  | 8  | 8  | 11 | 10 |
|        | B           | 6   | 10 | 11 | 10 | 9  |
|        | C           | 2   | 6  | 5  | 3  | 5  |

### Procedure

A standard procedure was designed and followed with the middle three age groups. However, due to scheduling difficulties and variations in the items to be administered, minor changes were made in the procedure for the three and nineteen year old Ss.

#### Standard Procedure (Seven, Eleven and Fifteen Year Olds)

Three Ss were taken from their classroom at P. K. Yonge on two separate days according to the randomly selected order condition. Thus one testing day involved the personal space measures, the other the time interview.

The exact procedure on the SPACE day was dependent on the order condition. However all Ss were given the behavioral measures first. S was brought to the experimental room by one of the three Es and asked to have a seat in the row of chairs along the wall. One of the stimulus persons was seated in the end chair. The number of chairs separating S from the stimulus person was recorded by an unobtrusive observer behind a screen (see Figure 3).

Then S was instructed by E to stand on a mark on the floor approximately thirty-six feet from the stimulus person. The instructions were:

I am going to have this person start to walk toward you. I would like you to tell me when you start to feel uncomfortable and want them to stop. Please look at them while they walk.

Now the other person will stand still. You walk toward them until you feel uncomfortable and want to stop, then stop. Again try and look at them while you walk.

Distances were recorded by the observer and the exact procedure was repeated for the other stimulus person.

Ss were then taken to one of three interview stations shown in Figure

3. The paper and pencil instrument and the felt board were administered according to the pre-selected order. These Ss imagined stimulus persons at the appropriate places on the paper and pencil instrument and marked their desired stopping distances with various colored pens. One diagram was used for all male stimulus persons and one for all female stimulus persons. Instructions for the paper and pencil instrument for these age groups were:

This page represents a large room. Pretend you are standing here (E points to center). Your best friend who is a boy is coming toward you through this door. Please take this pen and mark the place where you want him to stop because you feel uncomfortable.

An example of the felt board instructions is:

Pretend this figure with the green triangle on it is you. We'll put it on the board like this. Now this other yellow figure is your father. Please put him on the board, too.

Similar instructions were used for all stimulus persons. At the end of this session, Ss were allowed to return to their classrooms.

For the TIME interview, Ss were taken to one of the interview stations in the experimental room. They were told that no answer was right or wrong but rather all were opinion questions. The first four time related questions were asked to help Ss relax. Then a cassette tape recorder was turned on and the following instructions given:

Think about things that have happened to you or that you have done in the past (in the time gone by, all the yesterdays you have had). Take a minute to think about this: what things have happened to you? What have you done? Now would you tell me all the things you can think of? (Interviewer briefly recorded each event.)

Now I want you to tell me how important (the first event) was to you. Was it very important, pretty important, somewhat important, not very important or not important at all?

The interviewer was allowed to prompt with "anything else?" but was not allowed to suggest any particular event(s) to S. Further if the term past was not understood, E explained only with the alternative definitions enclosed in parentheses above. If S still did not comprehend, the interviewer continued with something new. A similar procedure was used for both present (now, currently) and future (in the time ahead, all the tomorrows you will have) events.

At this point the tape recorder was stopped and the semantic differential items administered. The seven and eleven year olds received the following detailed instructions and indicated their responses on a large chart with a movable X.

Next we would like to ask you some new questions. I'm going to give you a word and I want you to answer some questions about the word. For example, let's use the word candy bar. Now I want you to use these words (point to chart) to tell me how you feel about candy bars. The first words are important/unimportant. Now if you feel candy bars are very important you would place this X close to the word important; if you feel they're very unimportant you would place the X close to the word unimportant. If they're a little bit important place the X here (demonstrate) or a little bit unimportant place the X here (show). If you just don't know you would place the X in the middle. So the closer the X is to the word, the more you believe that word is true about candy bars. OK, let's do the next words. They are good/bad. How good or how bad do you think candy bars are? Show me where you'd put the X.

The fifteen year olds were given the following brief instructions and recorded their answers directly on the data sheets:

On each of the next three pages you will find a different word representing someone or something. You are to judge that person or thing on the set of scales underneath. Place an X in the position which best represents your feeling.

For instance, if the word was candy bar and you feel that candy bars are very close to the good end of the scale, you would put an X here (demonstrate). Thus



the closer you put an X to any particular word the more you think that word is true about the word at the top of the page. You may work quickly.

All Ss were given the option of not responding to any or all pairs of words.

Finally, the last four time questions were asked. Then S was thanked and allowed to return to his classroom.

#### Nineteen Year Olds

These Ss followed the same exact procedure as the fifteen year olds except they were tested during one session. They also were contacted within two weeks after the experimental session in order to obtain an estimate of their parents' SES.

#### Three Year Olds

Parents brought S to the experimental room and waited outside while the child was interviewed. However, some children became upset about leaving their parent(s) and in those cases, the parents were allowed to sit across the room from the experimenter and the child. Some children were so distressed that the parent remained seated with the child while the experimenter conducted the interview. Two female Ss were excluded as they would not answer even if their parent(s) was present. Further, parents of eight children either cancelled or failed to show for the interview. Table 6 presents the frequency of males and females who were tested with or without direct parental influence. In all cases parents were instructed to remain quiet and not to help the child.

After the child was seated at the table, the interview was conducted according to one of the randomly selected orders described above. All children received the personal space measures first and the time questions

TABLE 6

The Frequency of Three Degrees of Parental Contact  
with Three Year Old Subjects

| Sex    | Degree of Parental Contact |                |                       |
|--------|----------------------------|----------------|-----------------------|
|        | Child Alone                | Parent Present | Parent Sat with Child |
| Male   | 3                          | 1              | 8                     |
| Female | 2                          | 2              | 8                     |
| Total  | 5                          | 3              | 16                    |

second. An attempt was made to make friends with S and to explain each task to them in simple terms. Small one and one-half inch dolls were used to represent S and the stimulus persons in the paper and pencil test. The doll representing S was placed in the center and the doll representing each stimulus person was placed at the end of a randomly selected line.

The instructions were:

Let's pretend this piece of paper is a big room. Ok?  
Now this doll in the middle is you. This is (S's name).  
This doll over here is your best boy friend. Do you  
have a little boy friend? What's his name? Ok, this  
is (friend's name). Now he's going to walk toward  
you like this (E moves doll). You show me where you  
would want him to stop because he'd make you uncom-  
fortable. You move your friend. Remember this is you  
in the middle.

Similar instructions were used for each stimulus person with E substituting a name for the stimulus person when possible.

The standard felt board figures were used for the felt board instrument. Again names were substituted when possible in order to facilitate the child's understanding of the task. An example of the instructions is:

Now let's pretend this boy with the green triangle is  
you. This is (S's name). We'll put you right here.  
This figure is your daddy. Ok? Show me where you'd  
put your daddy on the board with you.

Similar instructions were used for all stimulus persons.

These Ss were asked the time questions as worded in Appendix A. They were allowed the option of saying they did not know to any or all questions. After the interview, Ss were returned to their parents whose questions, if any, were answered.

## CHAPTER III

### RESULTS

#### Preliminary Analysis

##### Personal Space

Several preliminary computations were conducted on the personal space measures before performing the primary analyses. These preliminary analyses were combinations of the various dependent measures. The following scores were calculated for both the felt board and the paper and pencil measures of personal space:

Familiar male (FM) score = mean of all responses to best male friend + father + brother.

Familiar female (FF) score = mean of all responses to best female friend + mother + sister.

Unfamiliar male (UM) score = mean of all responses to male stranger + mailman.

Unfamiliar female (UF) score = mean of all responses to female stranger + saleslady.

Composite scores also calculated for the behavioral measures:

Approached by (A) score = mean of all responses to approached by male and approached by female.

Approaches (A) score = mean of all responses to approaches male and approaches female.

Male behavioral (MB) score = mean of all responses to approached by male and approaches male.

Female behavioral (FB) score = mean of all responses to  
approached by female and  
approaches female.

These calculations permitted inclusion in the analyses below of the few subjects who had not responded to all items. Appendix B gives the number of subjects who did not respond to each dependent measure. The mean scores of these Ss were not significantly different from the mean scores of Ss responding to all items on the felt board and paper and pencil instruments. All seven to nineteen year old Ss responded to the behavioral items. Three year old Ss were not given this measure.

Further, z-score transformations were performed on the mean measures derived above. These z-scores permitted combination of similar mean scores across measures. Thus the z-score for familiar male on the felt board and the z-score for familiar male on the paper and pencil test were added. Further, mean z-scores were computed per each composite category; familiar male, familiar female, unfamiliar male and unfamiliar female. The male and female behavioral measures were added with the appropriate unfamiliar stimulus categories. Consequently, the composite z-scores incorporated all personal space measures.

#### Personal Time Perspective

Time formula. Each tape of each subject's responses was judged by one judge who recorded name of event, age of event, and importance of event as reported by the subject. A preliminary rating of eight tapes by two independent judges demonstrated 98 percent agreement on both age and importance of event. Due to this high inter-rater reliability only one judge rated the interview tapes.

After the tapes were analyzed, the measures of past, present and future time perspective were derived according to the prespecified formulas

(see page 57). These measures are essentially measures of temporal range within each domain, irrespective of chronological age, multiplied by the importance of specific events. Thus three scores result: past time perspective, present time perspective and future time perspective.

Actually only a past and future score resulted. During the interviews, present events were reported to have occurred at the present age. When applying these ages to the formula, scores of zero were obtained for the present time perspective for all but two subjects. Thus present time perspective scores cannot be examined utilizing this formula.

Utilizing these tapes, two other measures were calculated. First, a mean measure of importance for all events in each time domain was computed. Second, a frequency count of events in each time domain was obtained. Thus six other measures were used from the time formula information--past importance, present importance, future importance, number of events in the past, number of events in the present and number of events in the future.

Semantic differential. Two indices of time were calculated for the past, present and future referents from the semantic differential. First, a mean score of all evaluative items was computed by adding scores on the important/unimportant, bad/good, successful/unsuccessful, happy/sad and kind/cruel scales and dividing by the number of pairs of these items to which the subject responded. Secondly, a score for the major evaluative scale (good/bad) was used for each subject. This scale was chosen because all subjects responded to the good/bad adjectives.

Time related questions. The score for past, present and future on the time related questions was a frequency score of the number of items specifying desirability for each time domain. For example, a seven year

old subject who stated he would like to be eight received one point in the future domain on that item. The total number of items exemplifying each time domain was used as the score for that domain.

### Comparison of Measures

#### Personal Space

Correlations, excluding subjects with missing data, were computed between all mean composite scores for each type of measure of personal space. Ninety-six subjects were used for correlations involving the behavioral measures--as the three year old subjects were not tested on that measure. One hundred twenty subjects were used in computing the other correlation coefficients. Appendix C gives the correlation matrix and the sample size for each comparison. Ninety-three percent of the correlations were significant at least at the .02 level. Eighty percent were significant at the .001 level. All were positive. Thus there is strong evidence that these were measurements of the same construct, i.e., a general measure of personal space. Table 7 gives the correlation coefficients for similar composite scores across methods. All of these correlations were significant at least at the .01 level. However, these correlations, although significant, account for only eight to 27 percent of the variance (see Table 7). Due to this limitation, the results are presented below in terms of the analysis of each type of measurement technique as well as in terms of the composite  $\bar{z}$ -scores. Extremely similar results were obtained with all analyses, again suggesting that they are measurements of a general construct of personal space.

TABLE 7

Correlations of Similar Constructs Across Methods<sup>a</sup>  
and the Percent of Variance Accounted for by the Correlations

| Construct            | Instrument       | Instrument  |                  |             |          |             |          |
|----------------------|------------------|-------------|------------------|-------------|----------|-------------|----------|
|                      |                  | Felt        | Paper and Pencil | Behavioral  |          |             |          |
|                      |                  | Correlation | Variance         | Correlation | Variance | Correlation | Variance |
| Familiar<br>Male     | Felt             | 1.00        | --               |             |          |             |          |
|                      | Paper and Pencil | .45**       | 20.25            |             |          |             |          |
| Familiar<br>Female   | Felt             | 1.00        | --               |             |          |             |          |
|                      | Paper and Pencil | .28*        | 7.90             |             |          |             |          |
| Unfamiliar<br>Male   | Felt             | 1.00        | --               |             |          |             |          |
|                      | Paper and Pencil | .41**       | 16.85            | 1.00        | --       |             |          |
|                      | Behavioral       | .42**       | 17.70            | .41**       | 16.85    | 1.00        | --       |
| Unfamiliar<br>Female | Felt             | 1.00        | --               |             |          |             |          |
|                      | Paper and Pencil | .51**       | 24.07            | 1.00        | --       |             |          |
|                      | Behavioral       | .41**       | 16.85            | .49*        | 24.07    | 1.00        | --       |

<sup>a</sup>The behavioral measures had no familiar scores.

\* $P < .01$ .

\*\* $P < .0001$ .



### Personal Time Perspective

Correlations, excluding subjects with missing data, were computed between all time measures. Appendix D gives the resulting correlation coefficients and the sample size for each.

Significant correlations were obtained in two groups. First, the semantic differential items including the mean of the evaluative items for past, present and future and the simple raw score on the good/bad items, all correlated positively with each other. Thus if a subject perceived the past to be good, he was likely to see the present and future as good also. The mean rating of important/unimportant obtained from the interview for each time domain also correlated significantly with the semantic differential items. Importance is basically an evaluative dimension and thus highly similar to the evaluative scale. These correlations and the variance attributable to them are presented in Table 8.

The correlation coefficients for the formula derived measures are presented in Table 9. The past time perspective score correlates highly with the number of events in the past ( $p < .01$ ), present ( $p < .001$ ) and future ( $p < .001$ ). The frequency scores of number of events in each time domain correlate significantly with each other time domain. Thus the greater the number of events reported in the past, the greater the amount in the present and the future. The variance accounted for in these correlations ranges from 33 to 53 percent. Further, these scores are highly correlated (15 percent of the variance accounted for) with the past time perspective formula derived score utilizing importance of each event. The future time perspective formula derived score, however, does not correlate significantly with any other measure, suggesting that it measures a different construct than mere number of events does.

TABLE 8

Correlations of Semantic Differential Time Measures  
and Percent of Variance Accounted for by the Correlations

| Measures                     | Evaluative                |                           |                           | Good/Bad                  |                           |             | Importance                |              |             |
|------------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|-------------|---------------------------|--------------|-------------|
|                              | Past<br>1                 | Present<br>2              | Future<br>3               | Past<br>4                 | Present<br>5              | Future<br>6 | Past<br>7                 | Present<br>8 | Future<br>9 |
| 1<br>Correlation<br>Variance | 1.00                      |                           |                           |                           |                           |             |                           |              |             |
| 2<br>Correlation<br>Variance | .75 <sup>a</sup><br>56.25 | 1.00<br>--                |                           |                           |                           |             |                           |              |             |
| 3<br>Correlation<br>Variance | .69 <sup>a</sup><br>47.65 | .75 <sup>a</sup><br>56.25 | 1.00<br>--                |                           |                           |             |                           |              |             |
| 4<br>Correlation<br>Variance | .80 <sup>a</sup><br>64.00 | .63 <sup>a</sup><br>39.75 | .57 <sup>a</sup><br>33.55 | 1.00<br>--                |                           |             |                           |              |             |
| 5<br>Correlation<br>Variance | .53 <sup>a</sup><br>26.35 | .72 <sup>a</sup><br>51.90 | .55 <sup>a</sup><br>30.25 | .59 <sup>a</sup><br>34.85 | 1.00<br>--                |             |                           |              |             |
| 6<br>Correlation<br>Variance | .45 <sup>a</sup><br>20.25 | .50 <sup>a</sup><br>25.95 | .75 <sup>a</sup><br>56.25 | .37 <sup>a</sup><br>13.75 | .36 <sup>a</sup><br>13.00 | 1.00<br>--  |                           |              |             |
| 7<br>Correlation<br>Variance | .36 <sup>b</sup><br>13.00 | .44 <sup>a</sup><br>19.40 | .50 <sup>a</sup><br>25.00 | .43 <sup>a</sup><br>18.55 | .46 <sup>a</sup><br>21.20 | .29<br>8.45 | 1.00<br>--                |              |             |
| 8<br>Correlation<br>Variance | .44 <sup>a</sup><br>19.40 | .40 <sup>a</sup><br>24.05 | .32 <sup>b</sup><br>9.90  | .38 <sup>a</sup><br>14.50 | .29 <sup>b</sup><br>8.45  | .21<br>4.45 | .39 <sup>a</sup><br>15.25 | 1.00<br>--   |             |
| 9<br>Correlation<br>Variance | .06<br>.20                | .15<br>2.25               | .24 <sup>c</sup><br>5.80  | -.10<br>1.00              | -.09<br>.80               | .16<br>2.40 | .16<br>2.40               | .20<br>4.00  | 1.00<br>--  |

<sup>a</sup>  $p < .001$ .<sup>b</sup>  $p < .01$ .<sup>c</sup>  $p < .05$ .

TABLE 9

Correlations of Formula Derived Time Measures and  
Percent of Variance Accounted for by the Correlations

| Measures      | Formula          |             | Number of Events |                  |                  |                  | Importance   |             |
|---------------|------------------|-------------|------------------|------------------|------------------|------------------|--------------|-------------|
|               | Past<br>1        | Future<br>2 | Past<br>3        | Present<br>4     | Future<br>5      | Past<br>6        | Present<br>7 | Future<br>8 |
| 1 Correlation | 1.00             |             |                  |                  |                  |                  |              |             |
| Variance      | --               |             |                  |                  |                  |                  |              |             |
| 2 Correlation | .00              | 1.00        |                  |                  |                  |                  |              |             |
| Variance      | 0                | --          |                  |                  |                  |                  |              |             |
| 3 Correlation | .32 <sup>a</sup> | -.03        | 1.00             |                  |                  |                  |              |             |
| Variance      | 9.9              | 0           | --               |                  |                  |                  |              |             |
| 4 Correlation | .46 <sup>b</sup> | -.06        | .73 <sup>b</sup> | 1.00             |                  |                  |              |             |
| Variance      | 21.20            | 0           | 53.35            | --               |                  |                  |              |             |
| 5 Correlation | .46 <sup>b</sup> | -.03        | .59 <sup>b</sup> | .57 <sup>b</sup> | 1.00             |                  |              |             |
| Variance      | 21.20            | 0           | 34.85            | 33.55            | --               |                  |              |             |
| 6 Correlation | .21              | -.23        | .16              | .15              | .32 <sup>a</sup> | 1.00             |              |             |
| Variance      | 4.45             | 5.35        | 2.40             | 2.25             | 9.90             | --               |              |             |
| 7 Correlation | .28 <sup>a</sup> | -.06        | .10              | .16              | .11              | .39 <sup>b</sup> | 1.00         |             |
| Variance      | 7.35             | 0           | 1.00             | 2.40             | 1.25             | 15.25            | --           |             |
| 8 Correlation | .10              | .08         | .02              | .01              | .08              | .16              | .20          | 1.00        |
| Variance      | 1.00             | 0           | 0                | 0                | 0                | 2.40             | 4.00         | --          |

<sup>a</sup>  $p < .01$ .<sup>b</sup>  $p < .001$ .

Thus two dimensions of temporal perspective were obtained. The first is an evaluative rating of each time domain. The second consists of various indices derived from the time formula scores. High positive correlations were obtained from the number of events in each domain and the past time perspective formula derived score suggesting that there is a relationship between ability to list events and the past time perspective score. The future time perspective score did not correlate with the other measure indicating that future time perspective does not depend simply on skill in reporting many events.

#### Description of Principle Analyses

A brief description of the principle analyses is presented below. Discussion of the specific results will be included in the following section--Testing the Hypotheses. The analyses are presented here to give a global picture of the computations performed.

#### Personal Space

Individual scores. Three types of analyses were computed on personal space data. The first was a two-way analysis of variance using each individual score for each measure of personal space as the dependent variable. Age and sex were the independent variables accounting for the variance. Appendix E summarizes these findings. A main effect for age was found in all cases.

Mean scores. The second type of analysis used mean scores as described above for the dependent measures. Separate analyses of variance were run for each of the three measures of personal space. A four-way analysis of variance with two repeated measures was computed for the

felt board data. Age and sex were the non-repeated independent variables and familiarity and sex of the stimulus person were the repeated measures. Table 10 presents the results of this analysis.

Table 11 presents the results of a similar analysis using the paper and pencil data.

Thirdly, a three-way ANOVA with one repeated measure, sex of stimulus person, was calculated using the behavioral data. Familiarity was not included with this analysis as both male and female stimulus persons were unfamiliar. Table 12 presents these results.

z-scores. Finally, the combined z-scores for all measures was used as the dependent variable. Again a four-way ANOVA with familiarity and sex of stimulus person as repeated measures and age and sex as non-repeated variables, was calculated. Table 13 presents the results of this analysis.

#### Personal Time Perspective

These analyses consisted of a series of two-way ANOVAS with age and sex as the independent variables. Each measure of time was utilized as a dependent measure. Appendix F gives the resulting significant ANOVAS. Table 14 and 15 give the results of these analyses for the time formula derived measures.

#### Personal Space and Personal Time Perspective

To observe the relationship between personal space and personal time perspective, correlations were calculated between all individual and composite scores of personal space and all measures of time. Further partial correlations factoring out the effects of age were calculated with the composite personal space scores and the formula derived time scores.

TABLE 10  
 Analysis of Variance of Mean Scores on the Felt Board  
 Measure of Personal Space

| Source                           | df  | MS        | F                   |
|----------------------------------|-----|-----------|---------------------|
| Age (A)                          | 4   | 139625.50 | 18.06 <sup>a</sup>  |
| Sex of <u>S</u> (S)              | 1   | 4841.67   | .63                 |
| A × S                            | 4   | 1047.41   | .14                 |
| Error within <u>Ss</u>           | 110 | 7731.30   | -                   |
| Familiarity (F)                  | 1   | 403354.20 | 154.19 <sup>a</sup> |
| A × F                            | 4   | 9183.86   | 3.51 <sup>b</sup>   |
| S × F                            | 1   | 592.50    | .23                 |
| A × S × F                        | 4   | 219.29    | .08                 |
| F × <u>Ss</u> within groups      | 110 | 2615.89   | -                   |
| Sex of Stimulus Persons (St)     | 1   | 1383.16   | 1.09                |
| A × St                           | 4   | 1097.71   | .86                 |
| S × St                           | 1   | 22093.54  | 17.35 <sup>a</sup>  |
| A × S × St                       | 4   | 3074.82   | 2.42 <sup>c</sup>   |
| St × <u>Ss</u> within groups     | 110 | 1273.26   | -                   |
| F × St                           | 1   | .00       | .00                 |
| A × F × St                       | 4   | 1337.54   | 1.29                |
| S × F × St                       | 1   | 1243.77   | 1.20                |
| A × S × F × St                   | 4   | 940.51    | .91                 |
| F × St × <u>Ss</u> within groups | 110 | 1033.98   | -                   |

<sup>a</sup><sub>p</sub> < .001.

<sup>b</sup><sub>p</sub> < .01.

<sup>c</sup><sub>p</sub> < .05.

TABLE 11  
 Analysis of Variance of Mean Scores on the Paper and  
 Pencil Measure of Personal Space

| Source                           | df  | MS       | F                  |
|----------------------------------|-----|----------|--------------------|
| Age (A)                          | 4   | 5264.42  | 9.08 <sup>a</sup>  |
| Sex of <u>S</u> (S)              | 1   | 8.18     | .01                |
| A × S                            | 4   | 460.07   | .79                |
| Error within <u>Ss</u>           | 110 | 579.77   | -                  |
| Familiarity (F)                  | 1   | 11681.63 | 98.80 <sup>a</sup> |
| A × F                            | 4   | 325.75   | 2.76 <sup>d</sup>  |
| S × F                            | 1   | 80.28    | .68                |
| A × S × F                        | 4   | 96.55    | .82                |
| F × <u>Ss</u> within groups      | 110 | 118.24   | -                  |
| Sex of Stimulus Person (St)      | 1   | 1.23     | .02                |
| A × St                           | 4   | 29.49    | .51                |
| S × St                           | 1   | 376.96   | 6.54 <sup>c</sup>  |
| A × S × St                       | 4   | 229.07   | 3.97 <sup>b</sup>  |
| St × <u>Ss</u> within groups     | 110 | 57.67    | -                  |
| F × St                           | 1   | 28.34    | .83                |
| A × F × St                       | 4   | 99.02    | 2.91 <sup>c</sup>  |
| S × F × St                       | 1   | 6.46     | .19                |
| A × S × F × St                   | 4   | 16.99    | .50                |
| F × St × <u>Ss</u> within groups | 110 | 33.98    | -                  |

<sup>a</sup><sub>p</sub> < .001.      <sup>b</sup><sub>p</sub> < .005.      <sup>c</sup><sub>p</sub> < .025.      <sup>d</sup><sub>p</sub> < .05.

TABLE 12  
 Analysis of Variance of Mean Scores on the  
 Behavioral Measures of Personal Space

| Source                       | df | MS       | F                  |
|------------------------------|----|----------|--------------------|
| Age (A)                      | 3  | 98602.56 | 10.94 <sup>a</sup> |
| Sex of <u>S</u> (S)          | 1  | 5063.52  | .56                |
| A × S                        | 3  | 22123.41 | 2.45 <sup>b</sup>  |
| Error within groups          | 88 | 9015.75  | -                  |
| Sex of Stimulus Person (St)  | 1  | 19200.00 | 22.44 <sup>a</sup> |
| A × St                       | 3  | 492.00   | .57                |
| S × St                       | 1  | 1102.08  | 1.29               |
| A × S × St                   | 3  | 1788.43  | 2.09               |
| St × <u>Ss</u> within groups | 88 | 855.77   | -                  |

<sup>a</sup><sub>p</sub> < .001.

<sup>b</sup><sub>p</sub> < .10.



TABLE 13  
 Analysis of Variance of  $\bar{z}$ -Scores Utilizing All  
 Three Measures of Personal Space

| Source                           | df | MS    | F                  |
|----------------------------------|----|-------|--------------------|
| Age (A)                          | 3  | 31.14 | 24.74 <sup>a</sup> |
| Sex of <u>S</u> (S)              | 1  | 1.01  | .80                |
| A × S                            | 3  | 1.00  | .80                |
| Error within <u>Ss</u>           | 88 | 1.26  | -                  |
| Familiarity (F)                  | 1  | .00   | .00                |
| A × F                            | 3  | .85   | 2.14               |
| S × F                            | 1  | .02   | .04                |
| A × S × F                        | 3  | .15   | .38                |
| F × <u>Ss</u> within groups      | 88 | .40   | -                  |
| Sex of Stimulus Person (St)      | 1  | .00   | .00                |
| A × St                           | 3  | .03   | .18                |
| S × St                           | 1  | 2.09  | 11.63 <sup>a</sup> |
| A × S × St                       | 3  | 1.14  | 6.36 <sup>a</sup>  |
| St × <u>Ss</u> within groups     | 88 | .18   | -                  |
| F × St                           | 1  | .00   | .00                |
| A × F × St                       | 3  | .16   | 1.24               |
| S × F × St                       | 1  | .06   | .47                |
| A × S × F × St                   | 3  | .12   | .89                |
| F × St × <u>Ss</u> within groups | 88 | .13   | -                  |

<sup>a</sup><sub>p</sub> < .001.

TABLE 14  
Analysis of Variance of Past  
Time Perspective

| Source              | <u>df</u> | F     | P     |
|---------------------|-----------|-------|-------|
| Age (A)             | 3         | 19.34 | .0001 |
| Sex of <u>S</u> (S) | 1         | .03   | .8530 |
| A × S               | 3         | .33   | .8067 |

TABLE 15  
Analysis of Variance of Future  
Time Perspective

| Source              | df | F   | P     |
|---------------------|----|-----|-------|
| Age (A)             | 3  | .74 | .5351 |
| Sex of <u>S</u> (S) | 1  | .00 | .9646 |
| A × S               | 3  | .28 | .8433 |

TABLE 16

Correlations of Mean Composite Personal Space Scores and  
Formula Derived Time Scores, Correcting for  
Reduced Variance and Personal Space<sup>a</sup>

| Personal Space Measure |    | Personal Time Measure |                         |
|------------------------|----|-----------------------|-------------------------|
|                        |    | Past Time Perspective | Future Time Perspective |
| Stimulus Person        |    |                       |                         |
| Felt                   | FM | .76                   | .77                     |
|                        | FF | .70                   | .71                     |
|                        | UM | .16                   | .18                     |
|                        | UF | .62                   | .61                     |
| Paper<br>and<br>Pencil | FM | .52                   | .60                     |
|                        | FF | .87                   | .87                     |
|                        | UM | .62                   | .58                     |
|                        | UF | .86                   | .82                     |
| Behavioral             | UM | .92                   | .92                     |
|                        | UF | .95                   | .95                     |

<sup>a</sup>The small range group used was the nineteen year old group.

Finally, correlations between the mean composite personal space scores and the formula derived time measures, correcting for the reduced variance in the space scores at age nineteen, were calculated. This correlation is a prediction of the correlation which would be obtained if the variance at age nineteen was as great as in the total sample. Table 16 presents these correlations.

#### Follow-up Tests

Tukey's Honesty Significant Difference Test [Kirk, 1968] was applied to all significant main and interaction effects resulting from the above analyses. The presentation of significant findings in the following sections is on the basis of these follow-up tests.

#### Testing the Hypotheses

##### Personal Space--Hypotheses One to Four

Evidence supporting and refuting the hypotheses is presented in terms of composite scores for each type of measurement. Further, because of high intercorrelations, the  $\underline{z}$ -score composite analysis is also utilized.

The first hypothesis, that personal space size increases up to approximately age eight to ten and decreases thereafter until it reaches a stable size was partially supported. Age produced a significant main effect in the four-way ANOVA with two repeated measures using mean scores on the felt board instrument ( $F = 18.06, p < .001$ ). A main effect for age also resulted from the similar analyses utilizing the paper and pencil ( $F = 9.08, p < .001$ ) and behavioral ( $F = 10.94, p < .001$ ) measures. Figures four through six show the changes in personal space with age.

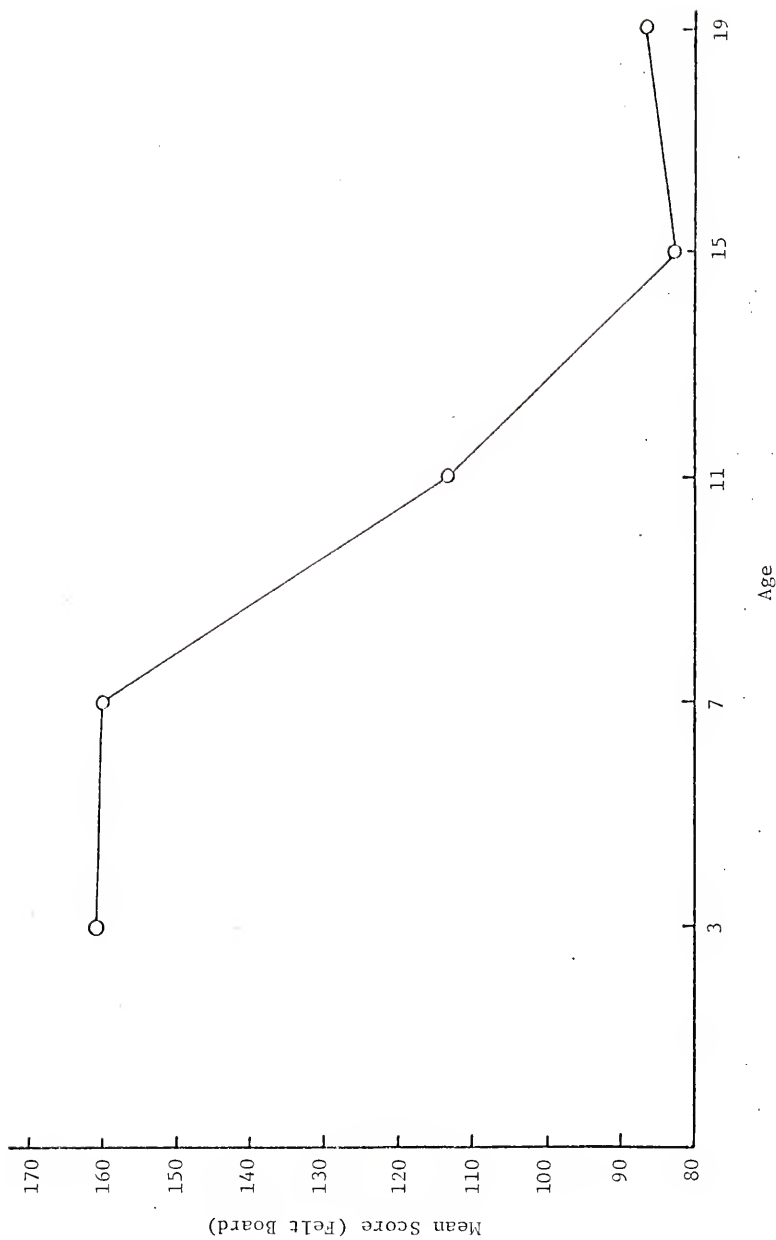


Figure 4. AGE CHANGES IN PERSONAL SPACE MEASURED BY THE FELT BOARD INSTRUMENT

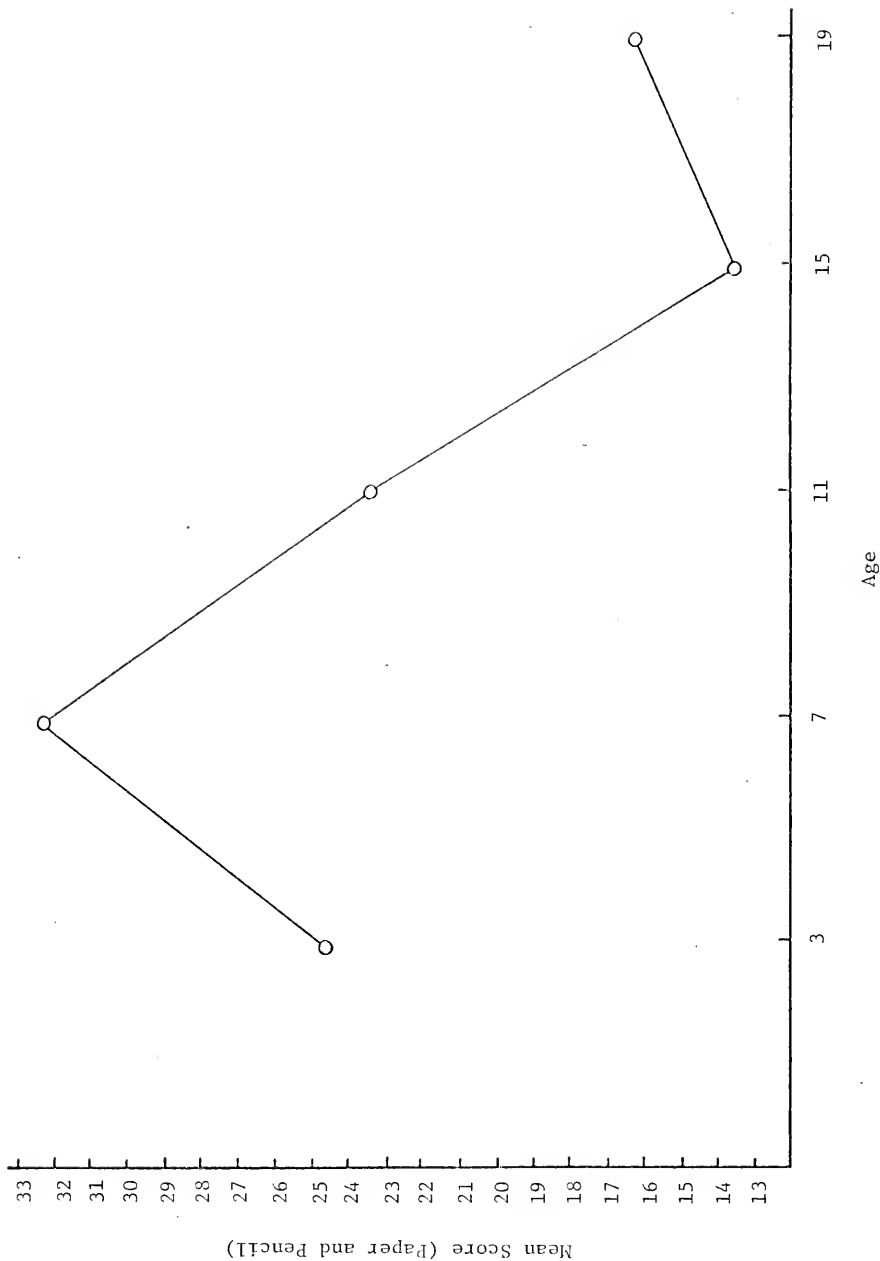


Figure 5. AGE CHANGES IN PERSONAL SPACE MEASURED BY THE PAPER AND PENCIL INSTRUMENT

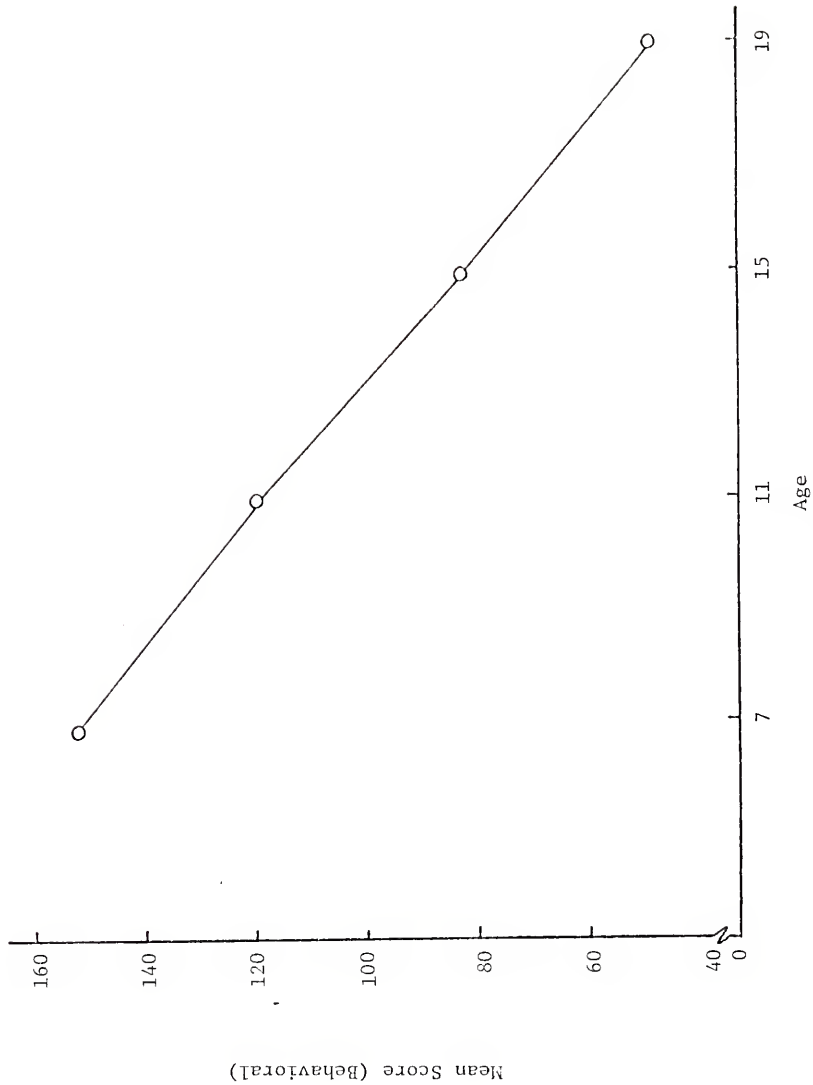


Figure 6. AGE CHANGES IN PERSONAL SPACE MEASURED BY THE BEHAVIORAL MEASURE



Significant differences were observed among ages seven, eleven and fifteen. The felt board and paper and pencil instruments yielded the predicted increase and decrease although they additionally suggest a slight increase from age fifteen to nineteen. However, this difference is not statistically different. The behavioral data were not collected from the three year olds so no early changes can be noticed. The behavioral data decreases across all ages.

Figure 7 demonstrates the main effect for age evidenced in the four-way ANOVA with two repeated measures using  $\bar{z}$ -score means ( $F = 24.74$ ,  $p < .001$ ). There is a significant increase from age three to seven and a significant decrease from age seven to eleven and eleven to fifteen. Thus there is a general decrease until age fifteen and a slight but not significant increase at age nineteen.

Hypothesis two, that variance in personal space size with respect to any particular stimulus person decreases with age, was supported. Appendix G gives the variances at each age in reference to each specific stimulus person. Table 17 gives the variances at each age for each composite score derived for each type of instrument. The statistic  $F_{\max}$ , a stringent measure of differences in variance, was used to test age changes. There is a significant difference in the variances in personal space in relation to males as measured by the behavioral instrument ( $F_{\max} = 6.28$ ,  $p < .01$ ). Although there is a steady decrease with age, the variances at ages seven, eleven and fifteen are not significantly different from each other. The significance of  $F_{\max}$  for these variances is accounted for by the small variance at age nineteen. The variances in personal space behavior in relation to females using the behavioral measure are also significantly different ( $F_{\max} = 11.30$ ,  $p < .01$ ). This

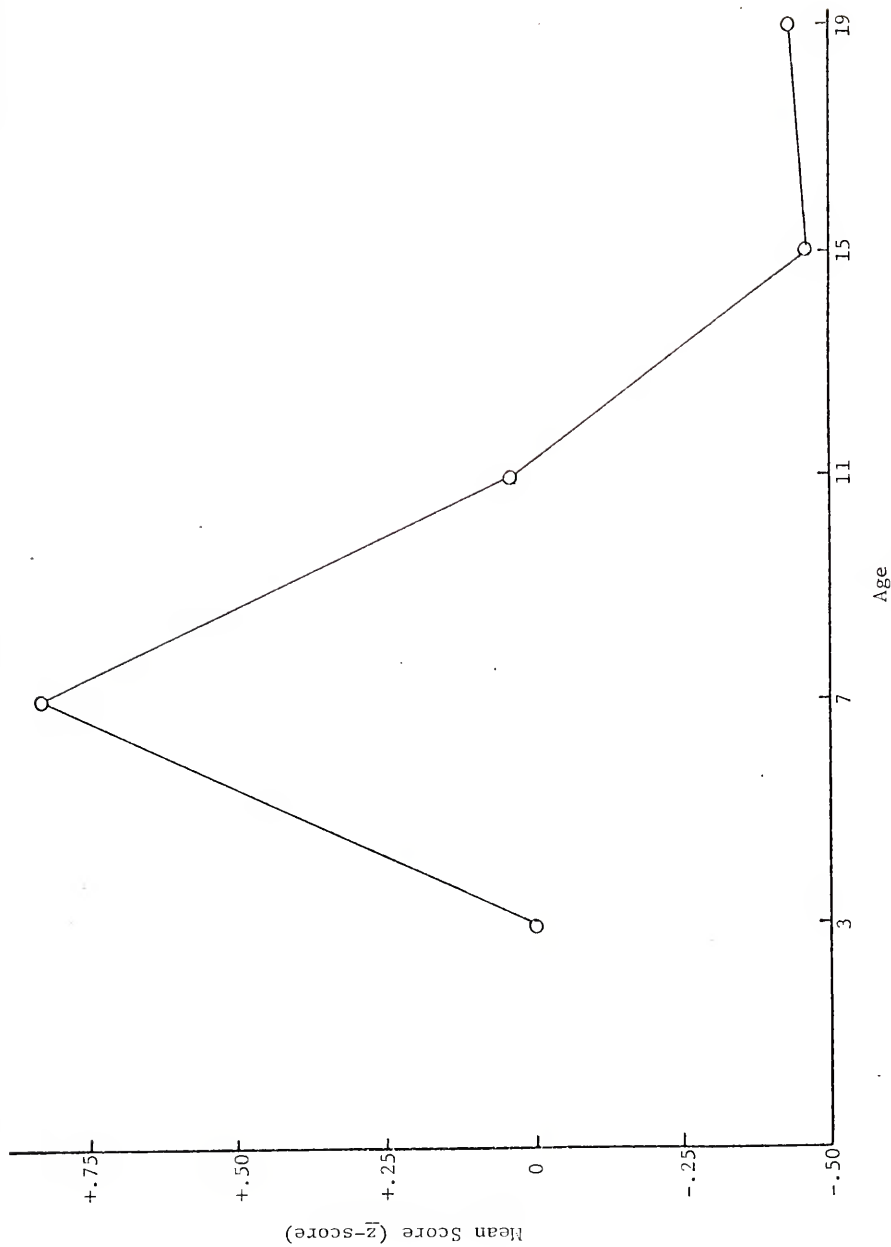


Figure 7. AGE CHANGES IN PERSONAL SPACE MEASURED BY THE COMPOSITE z-SCORES

TABLE 17  
 Variance Changes with Age in Mean  
 Personal Space Scores

| Instrument | Stimulus<br>Person | Age | Variance |
|------------|--------------------|-----|----------|
| Behavioral | UM                 | 7   | 7558.56  |
|            |                    | 11  | 6958.90  |
|            |                    | 15  | 5507.12  |
|            |                    | 19  | 1202.70  |
| Behavioral | UF                 | 7   | 7204.61  |
|            |                    | 11  | 6449.70  |
|            |                    | 15  | 3923.77  |
|            |                    | 19  | 637.56   |
| Felt Board | FM                 | 3   | 1863.65  |
|            |                    | 7   | 4813.58  |
|            |                    | 11  | 1441.72  |
|            |                    | 15  | 347.45   |
|            |                    | 19  | 1120.91  |
| Felt Board | FF                 | 3   | 4014.49  |
|            |                    | 7   | 3846.48  |
|            |                    | 11  | 1227.10  |
|            |                    | 15  | 981.57   |
|            |                    | 19  | 1052.35  |
| Felt Board | UM                 | 3   | 4708.70  |
|            |                    | 7   | 3703.46  |
|            |                    | 11  | 3578.43  |
|            |                    | 15  | 2273.38  |
|            |                    | 19  | 5070.87  |
| Felt Board | UF                 | 3   | 4126.78  |
|            |                    | 7   | 4681.30  |
|            |                    | 11  | 2919.24  |
|            |                    | 15  | 4844.16  |
|            |                    | 19  | 3674.78  |

TABLE 17--continued

| Instrument       | Stimulus<br>Person | Age | Variance |
|------------------|--------------------|-----|----------|
| Paper and Pencil | FM                 | 3   | 321.84   |
|                  |                    | 7   | 180.90   |
|                  |                    | 11  | 101.40   |
|                  |                    | 15  | 33.87    |
|                  |                    | 19  | 48.30    |
| Paper and Pencil | FF                 | 3   | 225.00   |
|                  |                    | 7   | 218.45   |
|                  |                    | 11  | 129.73   |
|                  |                    | 15  | 25.91    |
|                  |                    | 19  | 36.84    |
| Paper and Pencil | UM                 | 3   | 443.10   |
|                  |                    | 7   | 99.80    |
|                  |                    | 11  | 364.05   |
|                  |                    | 15  | 105.68   |
|                  |                    | 19  | 186.87   |
| Paper and Pencil | UF                 | 3   | 463.97   |
|                  |                    | 7   | 203.06   |
|                  |                    | 11  | 327.61   |
|                  |                    | 15  | 164.10   |
|                  |                    | 19  | 92.54    |

effect is again attributable to the small variance at age nineteen. Thus the behavioral measures indicate that although there is a steady decrease in variability with age, a large amount remains until age nineteen when there is a sharp decrease.

The paper and pencil measure demonstrates a sharp decrease in variance at age fifteen. Thus significant differences in variances across ages in relation to familiar males ( $F_{\max} = 9.50, p < .01$ ) and females ( $F_{\max} = 8.68, p < .01$ ) are due to the differences between younger ages (three, seven, and eleven) and the older ones (fifteen and nineteen). Variances across age in relation to unfamiliar males ( $F_{\max} = 4.43, p < .05$ ) and unfamiliar females ( $F_{\max} = 5.01, p < .01$ ) are also significantly different. These effects are more confused but can be explained in part by a significant decrease in variance from age three to age seven with an increase at age eleven. There is the typical sharp decrease at later ages (fifteen in relation to unfamiliar males and nineteen in relation to unfamiliar females).

The changes in variance observed using the felt board instrument are not as clearly interpreted. Variances across age in relation to unfamiliar males ( $F_{\max} = 2.23$ ) and unfamiliar females ( $F_{\max} = 1.66$ ) are not significantly different. The significant difference in the variances in relation to familiar females ( $F_{\max} = 4.09, p < .05$ ) is due to the difference between the two youngest (three and seven) and the three oldest age groups (eleven, fifteen and nineteen). This decrease occurs earlier than those described with the behavioral indices above. The differences in variance in relation to familiar males is significant ( $F_{\max} = 13.85, p < .01$ ), but is confusing as it is caused by the large amount of deviation at age seven and an extremely small amount at age

fifteen. There is a significant increase at age nineteen also and no consistent pattern is discernible.

Thus the behavioral and paper and pencil measures support the hypothesis by demonstrating steady decreases in variance with increasing age. However, a more accurate assessment is that variance in personal space behavior remains great until age fifteen or nineteen when a sharp decline is observed and a steady rate observed thereafter. The felt board data cannot be used to refute the hypothesis for a general decreasing trend is usually present even if not significant statistically.

The hypothesis that personal space in relation to same sex persons increases after puberty while personal space in relation to opposite sex persons decreases was tested by examining the Age  $\times$  Sex of S  $\times$  Sex of Stimulus Person interactions in each of the three ANOVAS for each type of measurement as well as the ANOVA for the composite z-scores. Figure 8 shows this significant interaction utilizing the felt board measure ( $F = 2.42, p < .05$ ). The significance is caused by the early ages (three and seven) difference from the later ages (eleven, fifteen and nineteen). There is essentially little difference between ages fifteen and nineteen. However, male and female Ss maintain a consistently larger personal space in relation to opposite than same sex persons at early ages. This difference disappears by age fifteen. For males there is a slight trend in support of the hypothesis between ages fifteen and nineteen. That is, personal space continues to decrease in relation to females but undergoes a slight increase in relation to males.

Figure 9 depicts the similar significant Age  $\times$  Sex of S  $\times$  Sex of Stimulus Person interaction ( $F = 3.97, p < .005$ ) obtained using the

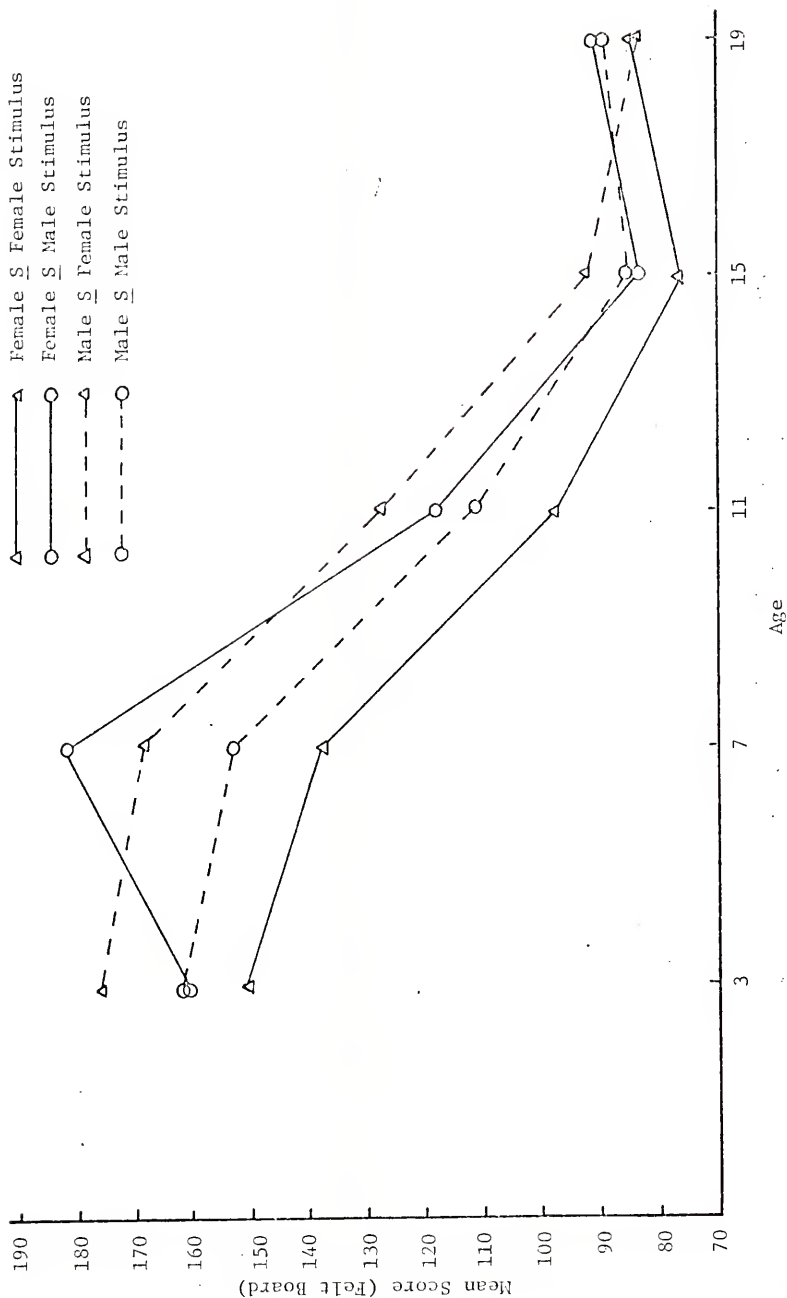


Figure 8. THE SIGNIFICANT AGE  $\times$  SEX OF S  $\times$  SEX OF STIMULUS PERSON INTERACTION WITH THE FELT BOARD DEPENDENT VARIABLE

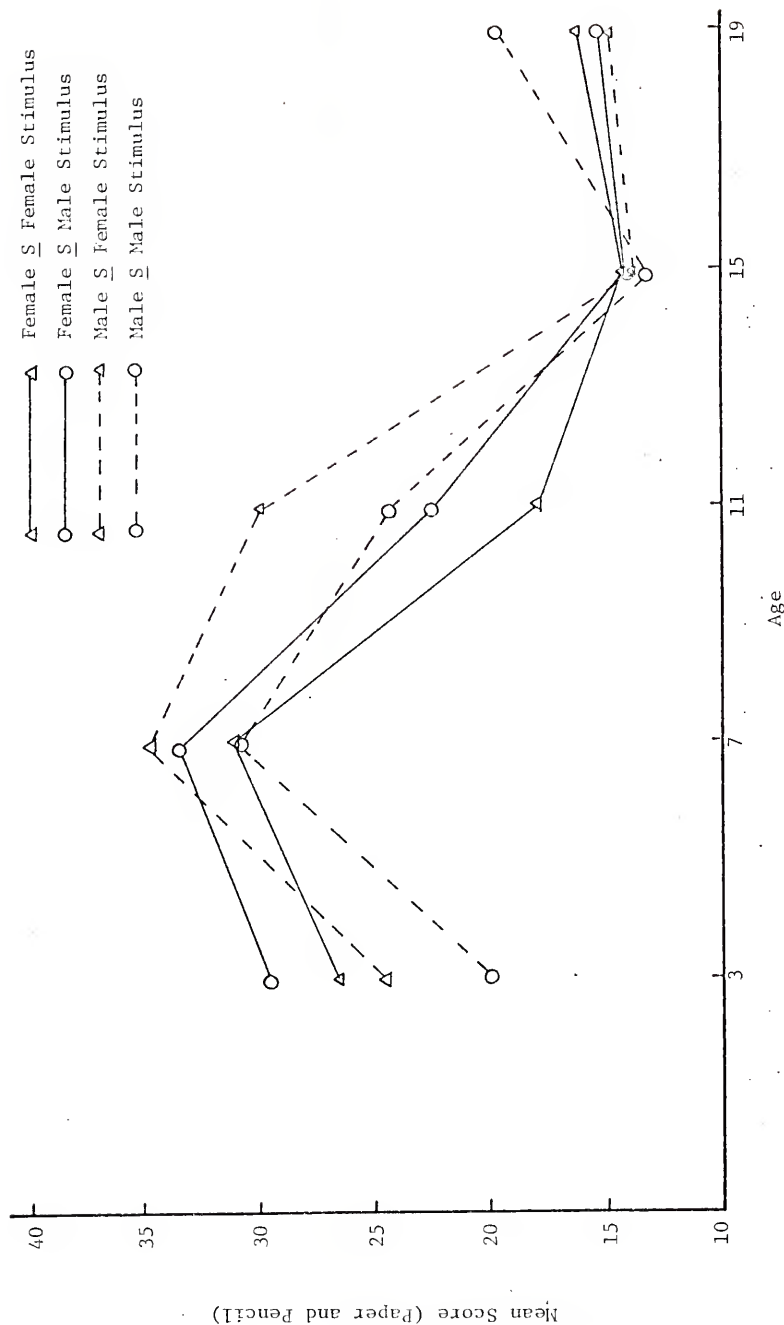


Figure 9. THE SIGNIFICANT AGE  $\times$  SEX OF S  $\times$  SEX OF STIMULUS PERSON INTERACTION WITH THE PAPER AND PENCIL DEPENDENT VARIABLE



paper and pencil measure of personal space. Again the significance is largely attributable to differences between ages seven, eleven and fifteen. However, again there is a slight increase in personal space behavior for males in relation to other males at age nineteen. Females behavior remains relatively constant.

A significant Age  $\times$  Sex of S  $\times$  Sex of Stimulus Person interaction ( $F = 3.52$ ,  $p < .01$ ) was also found utilizing the z-score composite indices. Figure 10 shows this interaction. Here the differences are largely attributable to the increase in personal space from age three to seven and the decrease from age seven to eleven and eleven to fifteen. Age changes and the change in male personal space behavior at age nineteen is not very great.

Further support for this hypothesis is found in the significant Sex  $\times$  Age interaction ( $F = 3.32$ ,  $p < .02$ ) using the behavioral data in relation to females only (approached by and approaches). Figure 11 shows that males from age eleven to fifteen and fifteen to nineteen demonstrate significantly decreasing personal space in relation to females. Females, however, show a significant decrease from age seven to eleven and thereafter maintain stable personal space size in relation to females. This interaction is not significant for personal space in relation to male stimulus persons.

Thus the hypothesis that personal space increases in relation to same sex persons after puberty and decreases in relation to opposite sex persons was partially supported. There is a decrease in relation to opposite sex persons after age fifteen. The hypothesized increase in relation to same sex persons does not occur in female behavior but does occur in males at age nineteen.

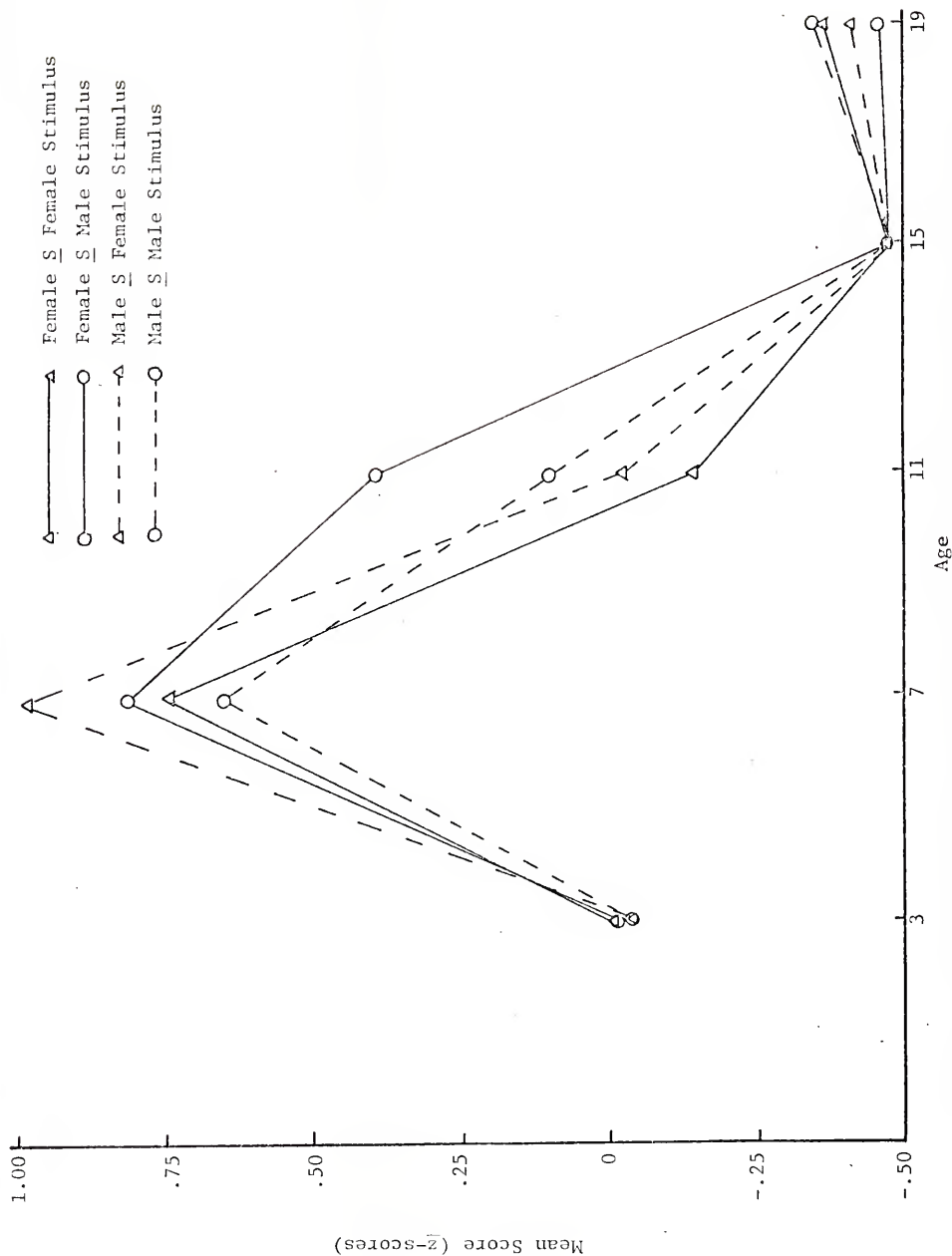


Figure 10. THE SIGNIFICANT AGE  $\times$  SEX  $\times$  SEX OF STIMULUS PERSON INTERACTION WITH THE  $\bar{z}$ -SCORE COMPOSITE MEASURE AS DEPENDENT VARIABLE

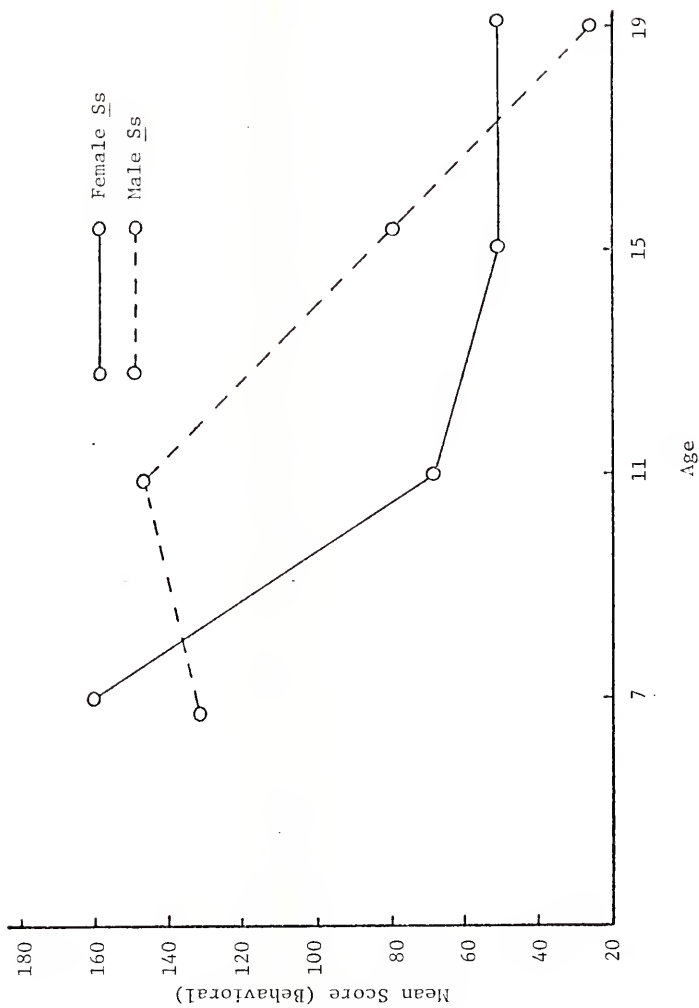


Figure 11. THE SIGNIFICANT SEX OF S  $\times$  AGE INTERACTION WITH THE BEHAVIORAL DEPENDENT MEASURE IN RELATION TO FEMALES

Hypothesis four, that females have smaller average personal spaces than males, particularly after puberty, was partially supported. Neither the felt board nor the paper and pencil instrument yielded a significant main effect for sex of S or a significant Age  $\times$  Sex of S interaction. The behavioral data yielded an Age  $\times$  Sex of S interaction which approached significance ( $F = 2.45$ ,  $p < .10$ ) and which is diagrammed in Figure 12. Females have significantly smaller personal spaces at ages eleven and fifteen, the ages when sexual development is important. However, male/female differences dissipate by age nineteen. Further support for this hypothesis is gained from the significant Age  $\times$  Sex of S interaction ( $F = 3.32$ ,  $p < .02$ ) obtained using the behavioral sum scores in relation to female stimulus persons only (see Figure 11). Again females had smaller personal space in relation to females at ages eleven and fifteen than males. These differences disappear by age nineteen.

The second part of hypothesis four stated that females have smaller personal spaces than males in relation to same sex friends and relatives. This was not supported in any of the primary analyses. However a significant Sex of S  $\times$  Sex of Stimulus Person interaction was obtained in both the paper and pencil ( $F = 6.54$ ,  $p < .025$ ) and felt board ( $F = 17.35$ ,  $p < .001$ ) ANOVAS with repeated measures. Figures 13 and 14 depict these interactions. Thus both males and females have smaller personal spaces in relation to same sex than opposite sex persons regardless of familiarity.

#### Personal Time Perspective--Hypotheses Five and Six

The hypothesis that past and future time perspectives increase with age is supported for past time perspective and refuted for future time

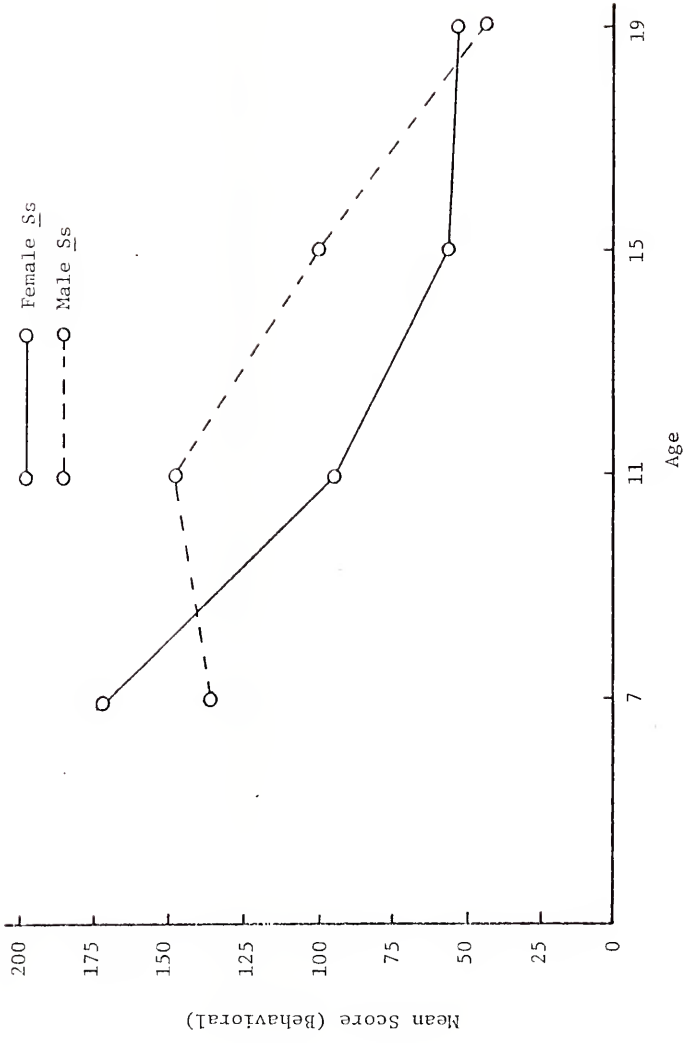


Figure 12. THE AGE  $\times$  SEX OF  $\bar{S}$  INTERACTION USING THE BEHAVIORAL DEPENDENT MEASURE

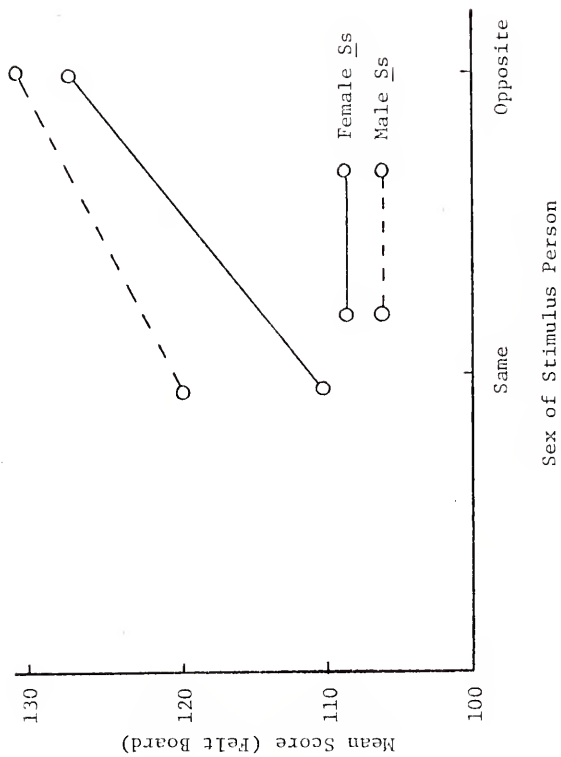


Figure 13. THE SIGNIFICANT SEX OF S  $\times$  SEX OF STIMULUS PERSON INTERACTION WITH THE FELT BOARD DEPENDENT VARIABLE

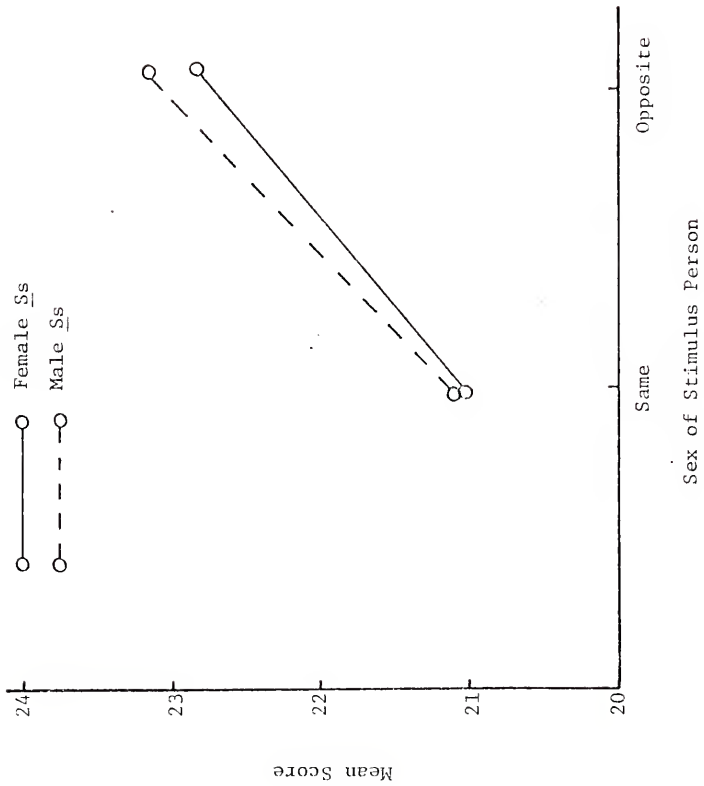


Figure 14. THE SIGNIFICANT SEX OF S  $\times$  SEX OF STIMULUS PERSON INTERACTION WITH THE PAPER AND PENCIL DEPENDENT MEASURE

perspective. Evidence is obtained utilizing the time formula scores. A significant main effect for age ( $F = 19.34$ ,  $p < .0001$ ) resulted from a two-way ANOVA using age and sex as the main variables. Each age was different from each other age. Figure 15 depicts this increase in past time perspective with age.

Further support for the first part of this hypothesis is gained from a significant main effect ( $F = 3.04$ ,  $p < .03$ ) for age using the number of time related questions as the dependent measure. This increase is due to the increase in the number of questions expressing past desirability at age nineteen. It is diagrammed in Figure 16. Further, there is a significant increase in the number of events listed in the past with an increase in age ( $F = 12.20$ ,  $p < .001$ ; see Figure 17). (However, this significant increase may be due only to an increase in ability to recall events as the same increase is obtained in listing frequency of present and future events.) Age approaches significance as a main effect ( $F = 2.196$ ,  $p < .09$ ) when using the mean evaluative score of the semantic differential items. This trend, plotted in Figure 18, is attributable to the differences between the younger ages (seven and eleven) and the older ones (fifteen and nineteen).

The second part of this hypothesis, that future time perspective would increase with age, was not supported. A two-way ANOVA using sex and age as independent variables and the time formula derived score as the dependent variable produced no significant effects. There is a significant age main effect (each age different from each other age) in the number of events reported ( $F = 26.55$ ,  $p < .0001$ ) probably attributable to an increased ability to list events. Using the number of time related questions as the dependent variable, a significant main effect



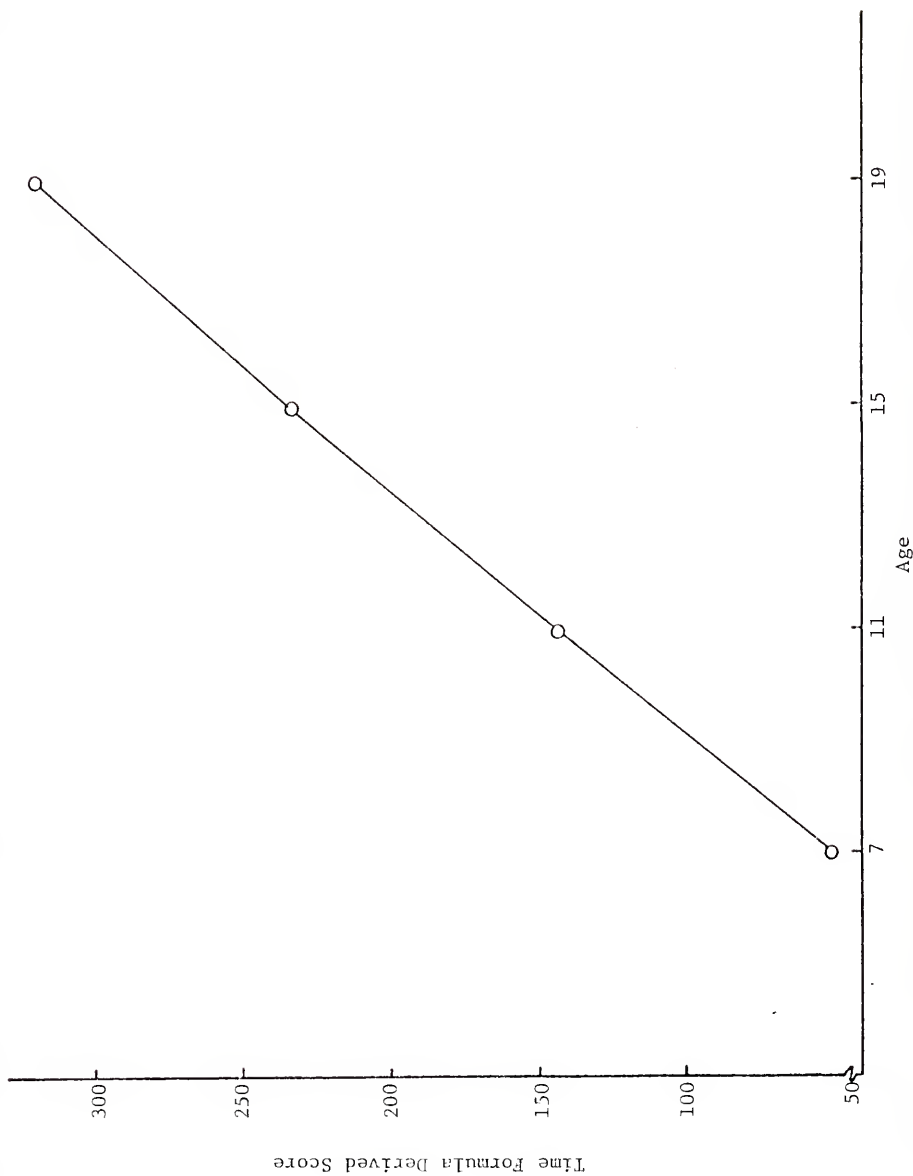


Figure 15. CHANGES WITH AGE IN PAST TIME PERSPECTIVE USING THE TIME FORMULA DERIVED MEASURE AS DEPENDENT VARIABLE

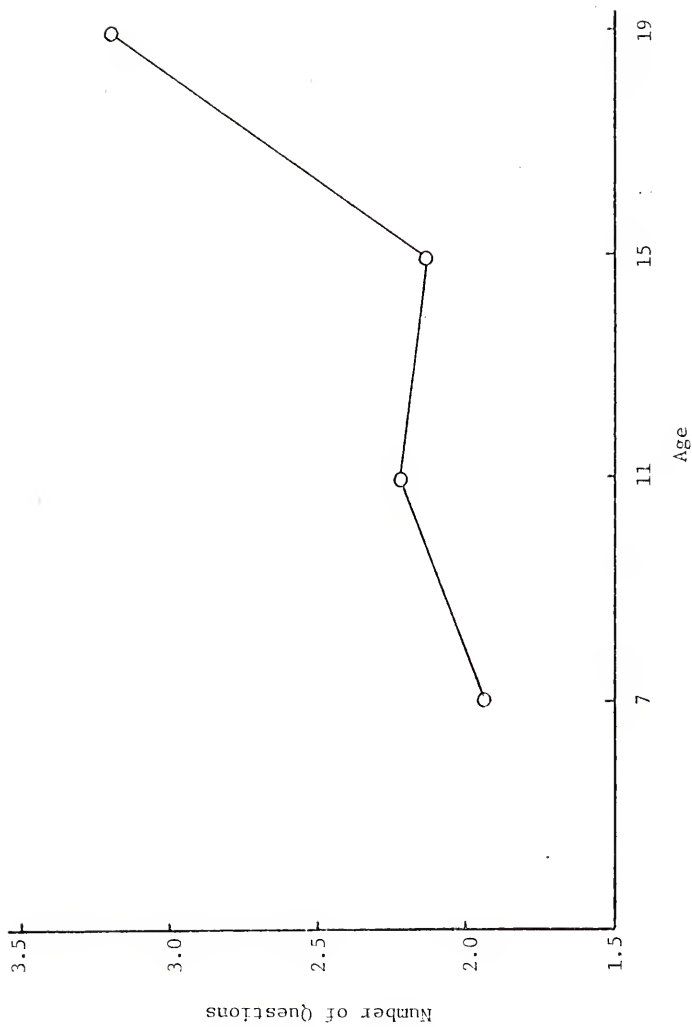


Figure 16. CHANGES WITH AGE IN PAST TIME PERSPECTIVE USING THE NUMBER RELATED QUESTIONS AS DEPENDENT VARIABLE

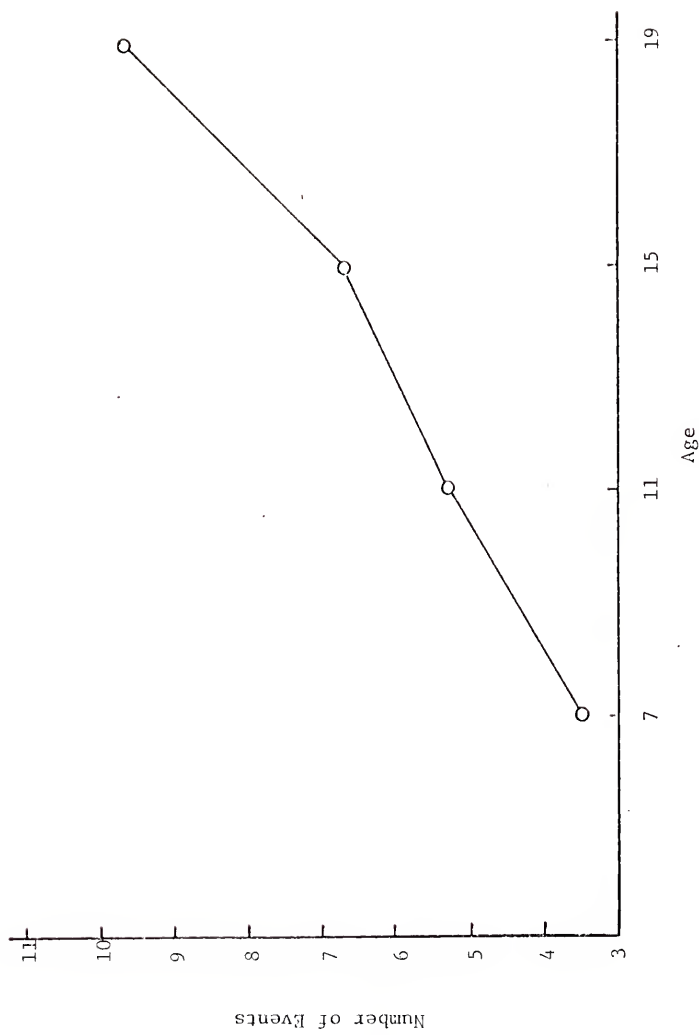


Figure 17. CHANGES WITH AGE IN PAST TIME PERSPECTIVE USING THE NUMBER OF REPORTED EVENTS AS THE DEPENDENT VARIABLE

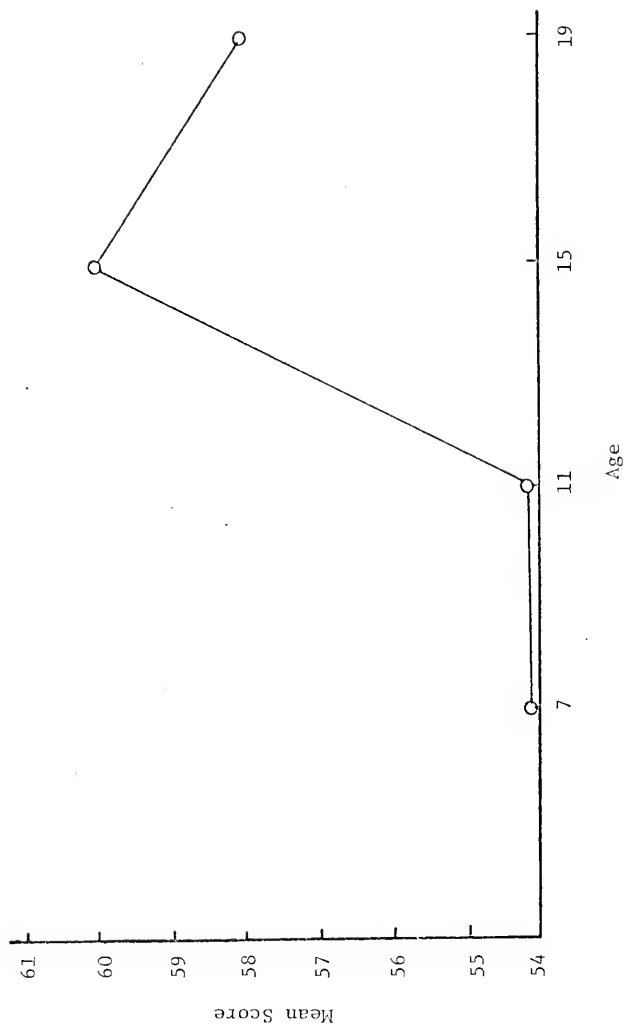


Figure 18. CHANGES WITH AGE IN PAST TIME PERSPECTIVE USING THE MEAN EVALUATIVE SCORE ON THE SEMANTIC DIFFERENTIAL ITEMS AS THE DEPENDENT VARIABLE

for age was obtained ( $F = 4.02, p < .01$ ). However, this suggests a decrease in future time perspective with age as seen in Figure 19. Therefore there is no support for this hypothesis.

This finding, that the number of time related questions as a measure of future time perspective decreases, lends support to the fact that the increase in past time perspective is not simply an increase in verbosity. That is, all of the measures of past time perspective showed an increase in past time perspective with increasing age. Since a similar increase is not found for future time perspective, it appears that more is occurring in terms of past time perspective than simply an increase in talking or the ability to list events.

The next hypothesis stated that females, after puberty, have greater future time perspective than males. This was not supported using the time formula derived scores. In fact, a decreasing trend is found, although not significant, particularly for nineteen year old females. Further support for a decrease in future time perspective for females at age nineteen is obtained from two-way ANOVAS in which Sex  $\times$  Age interactions approach significance. Dependent variables were future importance ( $F = 2.30, p < .08$ ) and number of time related questions ( $F = 2.06, p < .11$ ). Both show a decrease in future time perspective with age for females, particularly at age nineteen. Figures 20 and 21 show these important trends.

#### Personal Space and Personal Time Perspective--Hypotheses Seven through Ten

The first hypothesis attempting to relate personal space and personal time perspective stated that persons with large average personal spaces have larger present time perspectives than persons with small average

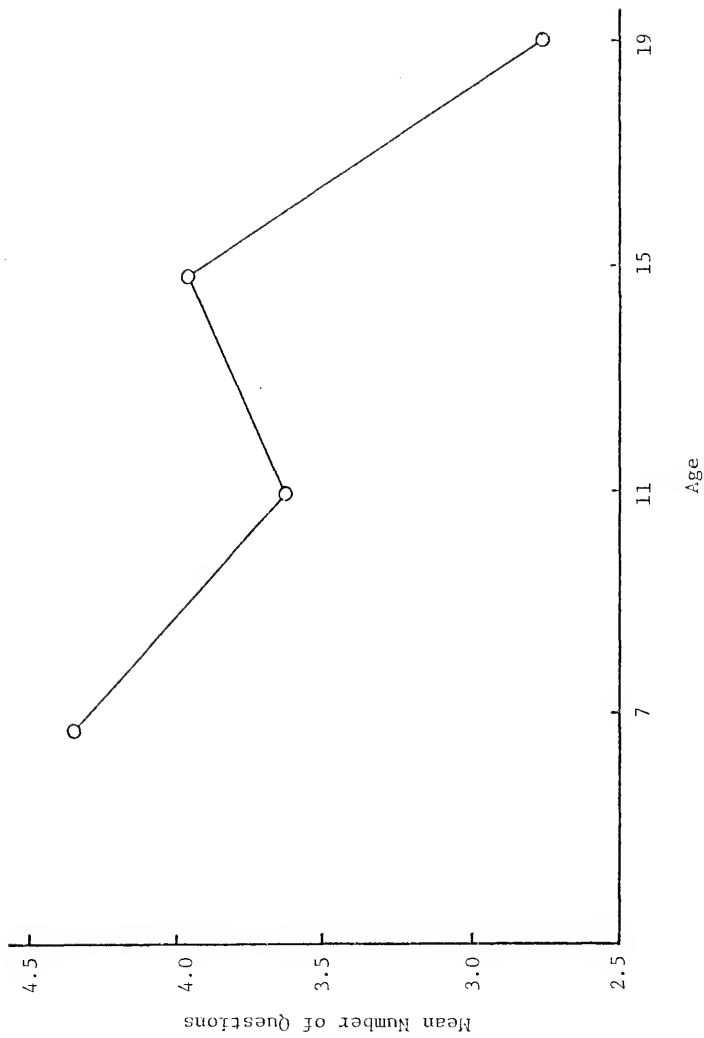


Figure 19. CHANGES WITH AGE IN FUTURE TIME PERSPECTIVE USING THE NUMBER OF TIME RELATED QUESTIONS AS THE DEPENDENT VARIABLE

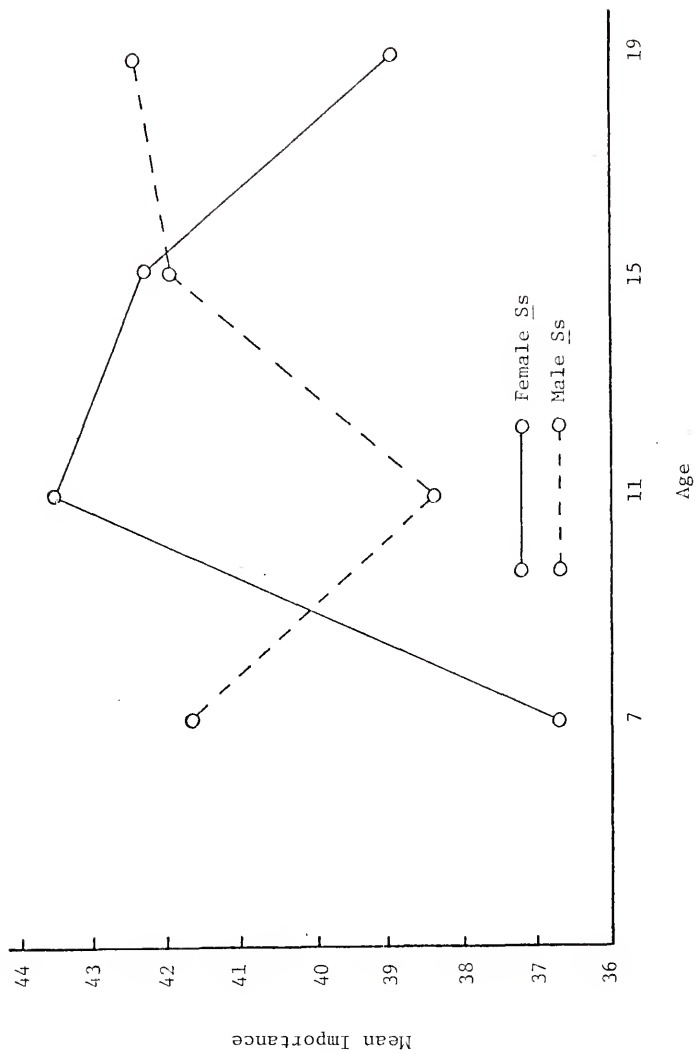


Figure 20. THE SIGNIFICANT AGE  $\times$  SEX INTERACTION USING THE MEAN FUTURE IMPORTANCE AS THE DEPENDENT VARIABLE

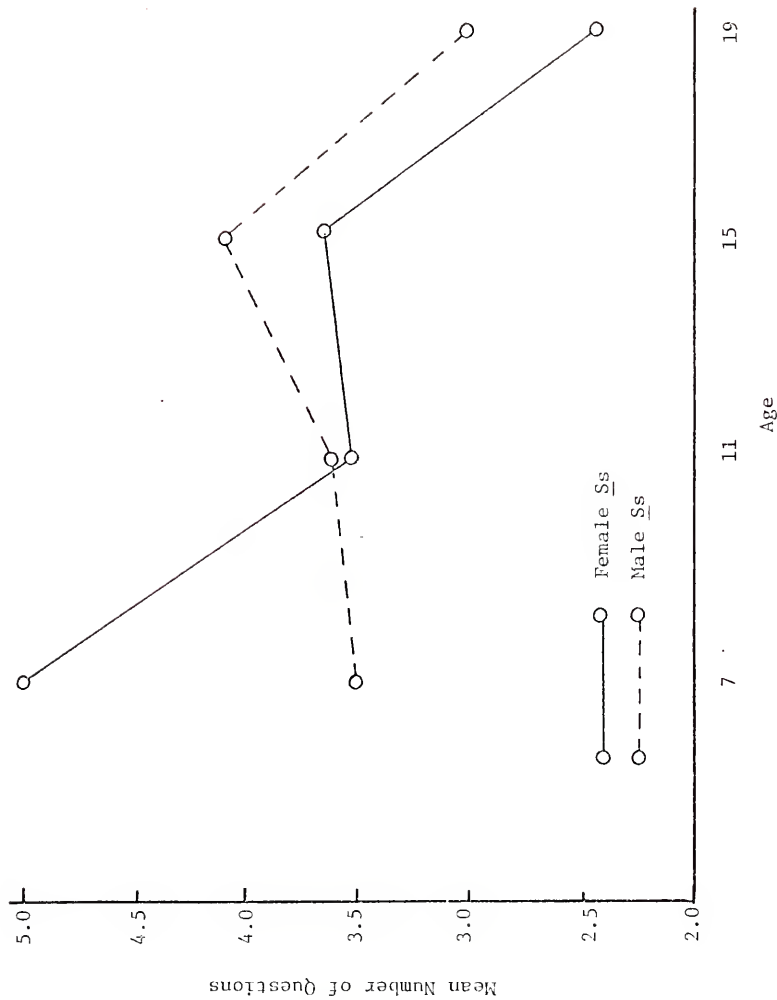


Figure 21. THE SIGNIFICANT AGE  $\times$  SEX INTERACTION USING THE NUMBER OF FUTURE TIME RELATED QUESTIONS AS THE DEPENDENT VARIABLE



personal spaces. This hypothesis could not be tested using the time formula as present time perspective scores were obtained for only two subjects (see Preliminary Analyses--Time formula).

Some evidence was obtained using the other measures of personal space which refutes the hypothesis. The mean evaluative score for the present correlates significantly and negatively with the behavioral male and female and the paper and pencil measures of personal space in relation to unfamiliar males and females. The good/bad scores correlate negatively with the two behavioral mean scores also. The number of events listed in the present correlate negatively and significantly with all mean measures of personal space. Finally, the importance measure correlates negatively with the male behavioral measure, the familiar male and female and unfamiliar felt board and paper and pencil measures. Table 18 presents these correlation coefficients and the corresponding sample sizes. Many of these significant correlations may be attributable to the changes in age which occur with the personal space and personal time perspective measures.

Hypothesis eight, that there is a negative correlation between average personal space size and future time perspective, was not supported. Future time perspective as measured by the time formula, did not correlate with any of the mean personal space scores. Further, future time perspective measured by the other indices correlated significantly with the mean space scores in only three of forty possible cases. Because of the strength of the age variable, correlations within each group were also examined. Again few correlations were significant and those found probably were attributable to chance.

The correlations obtained with the reduced variance in personal

TABLE 18  
 Significant Past Time Perspective and  
 Mean Space Score Correlations

| Space Measures                         | Time Measures |                    |                    |                    |                    |
|--|---------------|--------------------|--------------------|--------------------|--------------------|
|  | Evaluative    | Good/Bad           | Number of Events   | Importance         |                    |
| Paper and Pencil Felt Board Behavioral | UM            | -.232 <sup>d</sup> | -.319 <sup>b</sup> | -.342 <sup>a</sup> | -.168              |
|  | UF            | -.210 <sup>d</sup> | -.248 <sup>c</sup> | -.374 <sup>a</sup> | -.274 <sup>b</sup> |
|  | FM            | -.139              | +.020              | -.214 <sup>d</sup> | -.322 <sup>b</sup> |
|  | FF            | +.043              | -.036              | -.248 <sup>c</sup> | -.225 <sup>d</sup> |
|  | UM            | -.202              | -.084              | -.332 <sup>b</sup> | -.193              |
|  | UF            | -.114              | -.062              | -.290 <sup>b</sup> | -.250 <sup>c</sup> |
|  | FM            | -.155              | +.012              | -.243 <sup>c</sup> | -.254 <sup>c</sup> |
|  | FF            | -.052              | +.087              | -.314 <sup>b</sup> | -.218 <sup>d</sup> |
|  | UM            | -.257 <sup>c</sup> | -.204              | -.302 <sup>b</sup> | -.179              |
|  | UF            | -.219              | -.113              | -.297 <sup>b</sup> | -.265 <sup>c</sup> |

$\frac{a}{p} < .001.$   
 $\frac{b}{p} < .01.$   
 $\frac{c}{p} < .02.$   
 $\frac{d}{p} < .05.$

space correction factor (see Table 16) suggest that the failure to find a relationship within age groups is due to the reduction of variance when considering only part of the sample. If the variance remained as large, a positive relationship would be demonstrated. This analysis demonstrates the critical effect of the age factor.

The hypothesis that adolescents with small average personal space in relation to parents will have larger past time perspective than adolescents with large personal space in relation to parents was not supported. Correlations of past time perspective and personal space in relation to parents were not significant.

The last hypothesis, that persons with small personal space in relation to friends have greater present time perspective than persons with large personal space in relation to friends was not supported by correlational analysis.

These last two hypotheses are again limited by the reduction of variance when considering personal space and personal time perspective at only one age. A larger sample, with a greater degree of variability, may have yielded support for these hypotheses.

### Additional Findings

#### Personal Space

The degree of familiarity with the stimulus person produced major effects. Familiarity resulted in main effects in the felt board repeated measures ANOVA ( $F = 154.19$ ,  $p < .001$ ) and the paper and pencil ANOVA with repeated measures ( $F = 98.80$ ,  $p < .001$ ) with personal space being greater in relation to unfamiliar as opposed to familiar persons.

Further the strength of the familiarity effect helped produce significant Age  $\times$  Familiarity interactions with felt board ( $F = 3.51, p < .01$ ) and paper and pencil data ( $F = 2.76, p < .05$ ). These interactions are diagrammed in Figures 22 and 23.

A three-way Age  $\times$  Familiarity  $\times$  Sex of Stimulus Person interaction was also significant using the felt board data ( $F = 2.91, p < .025$ ) but the significance is attributable to the effects of age and familiarity rather than sex of the stimulus person and thus is highly similar to Figure 23.

#### Personal Time Perspective

In comparing the results using the time formula derived measures with previous research, it was noticed that a major difference in measurement is present. Previous estimates of past time perspective, present time perspective and future time perspective utilized the present age as a baseline. Thus past time perspective was the age range used here (not including the importance estimate (see formulas 2, 3 and 4), subtracted from the present age. Present time perspective score amounted to the present age minus the age range of the events reported in the present. Since zero was the common result obtained here for present age range, this generally resulted in a present time perspective equivalent to the actual present age. Thus differences in results are due to the exclusion of chronological age as a baseline in the formula.

Analyses using the previously commonly used measures more fully support several of the predicted hypotheses and are briefly presented here in order to allow comparisons with previous research. However, most of the results are due to the commonality of the age effect in both personal space and personal time perspective.

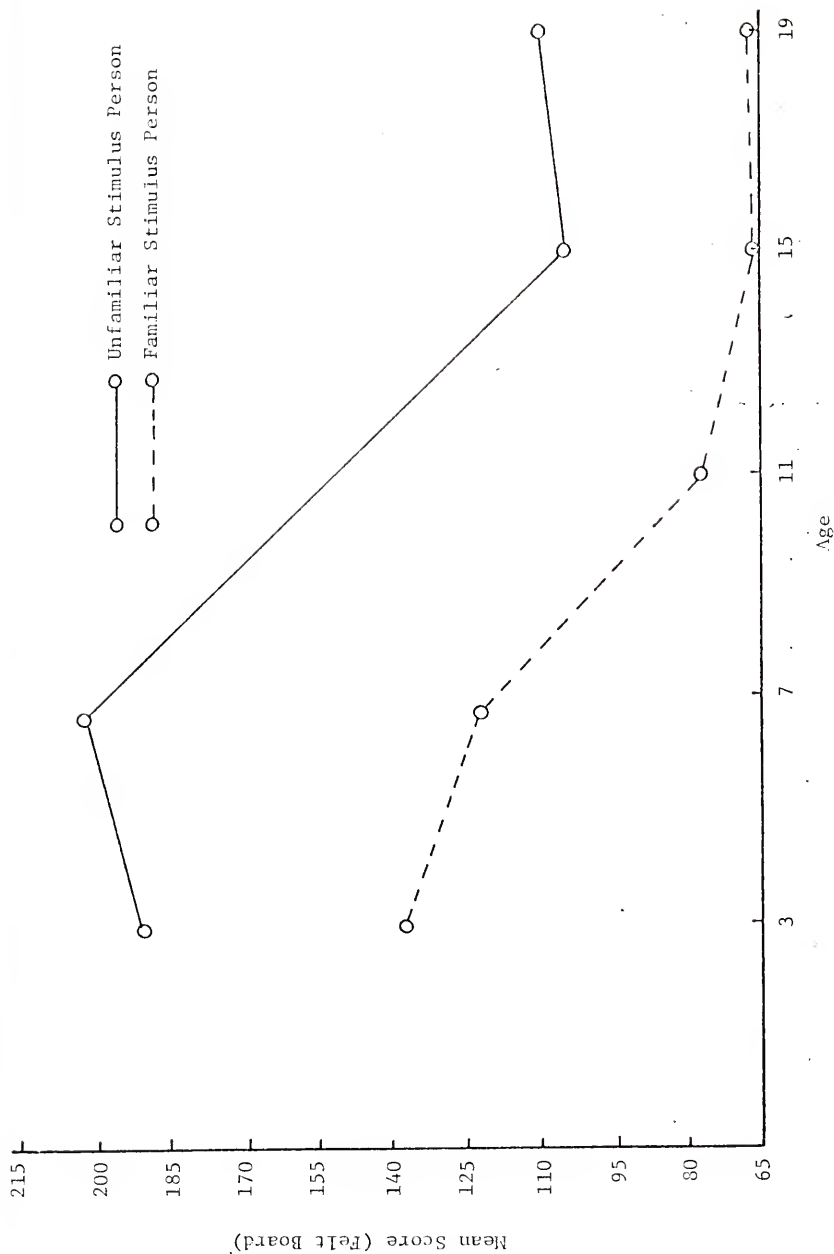


Figure 22. THE SIGNIFICANT AGE  $\times$  FAMILIARITY INTERACTION USING THE FELT BOARD INSTRUMENT

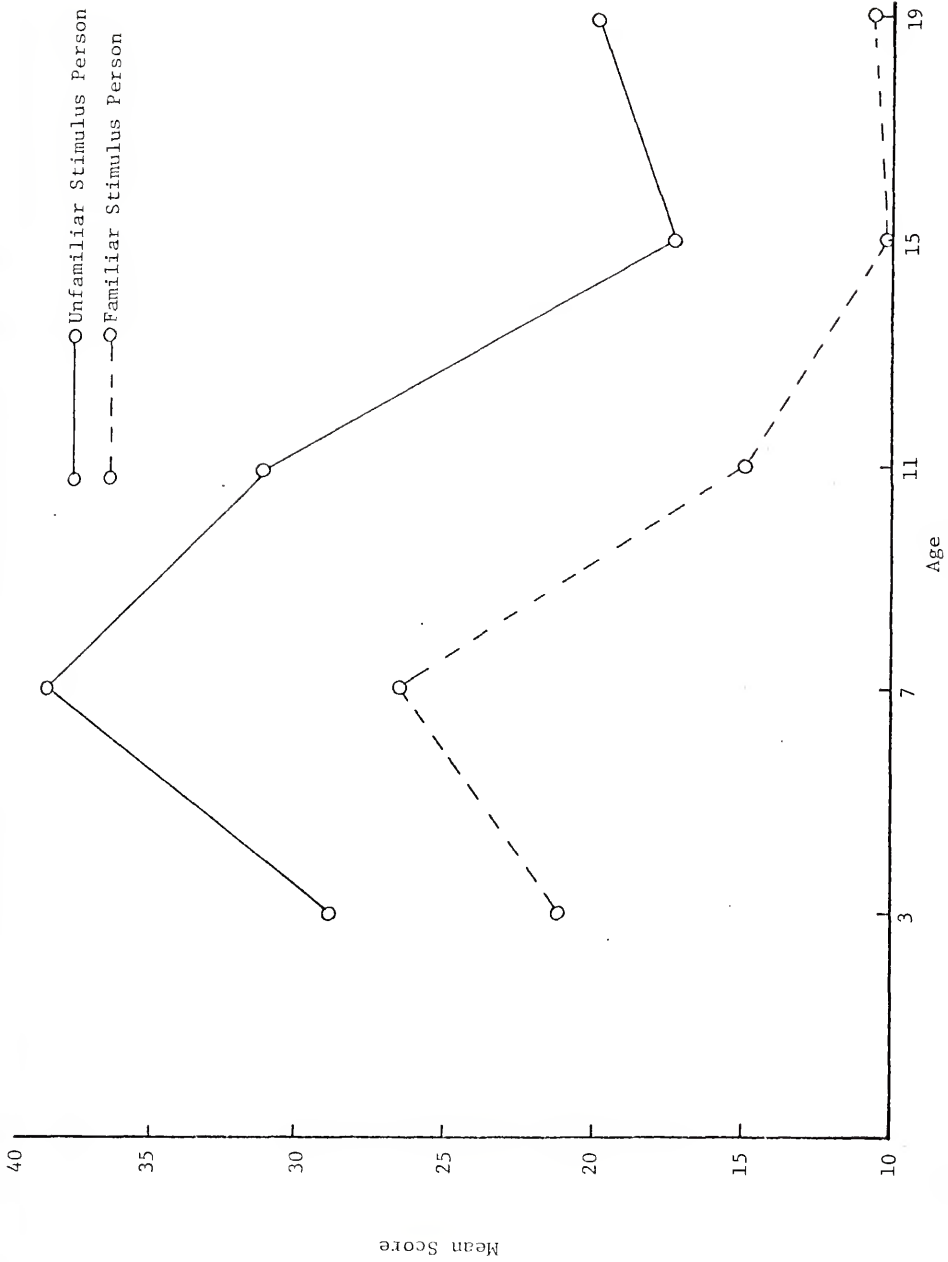


Figure 23. THE SIGNIFICANT AGE  $\times$  FAMILIARITY INTERACTION USING THE PAPER AND PENCIL INSTRUMENT

The dependent measures used in the results presented below can be calculated as follows:

$$\text{Age}_{\text{PATP}} = \text{Present Age} - \text{PATP} , \quad (5)$$

$$\text{Age}_{\text{PRTP}} = \text{Present Age} - \text{PRTP} , \quad (6)$$

$$\text{Age}_{\text{FTP}} = \text{Present Age} + \text{FTP} , \quad (7)$$

where PATP, PRTP and FTP are computed according to the formulas 2, 3 and 4.

Hypothesis six, that past and future time perspectives increase with age is supported using these age based measures for both past time perspective and future time perspective. Two ANOVAS with age and sex as the independent variables and  $\text{Age}_{\text{PATP}}$  and  $\text{Age}_{\text{FTP}}$  as the dependent variables resulted in significant main effects for age for  $\text{Age}_{\text{PATP}}$  ( $F = 148.08, p < .0001$ ) and  $\text{Age}_{\text{FTP}}$  ( $F = 4.05, p < .0098$ ). Table 19 presents the mean scores for each age group.

Hypothesis seven that persons with large personal space tend to have large present time perspectives was not supported using  $\text{Age}_{\text{PRTP}}$  as the measure of present time perspective. Partial correlations of  $\text{Age}_{\text{PRTP}}$  and mean space scores factoring out the common effects of age were not significant in any of the ten possible cases. Thus the highly significant correlations which were found were due to the common effects of age in both the personal space and the personal time perspective measures.

Hypothesis eight that there is a negative correlation between average personal space size and future time perspective is partially supported using  $\text{Age}_{\text{FTP}}$ .  $\text{Age}_{\text{FTP}}$  correlates negatively and significantly with unfamiliar male measured on the felt board ( $r = -.218$ ) and the

TABLE 19  
Age Changes in Past Time Perspective and  
Future Time Perspective using  
Age Based Dependent Measures

| Age | Age <sub>PATP</sub> | Age <sub>FTP</sub> |
|-----|---------------------|--------------------|
| 7   | 646.85              | 1432.95            |
| 11  | 907.41              | 1710.18            |
| 15  | 1248.46             | 2056.75            |
| 19  | 1547.58             | 2193.46            |



familiar male measured with the paper and pencil instrument ( $r = -.331$ ). However all of the correlations with mean personal space scores were negative even if not significant.

The other hypotheses dealing with personal time perspective were not supported using these age based estimates of temporal perspective.

#### Personal Space and Personal Time Perspective

The primary additional finding resulted from the correlations correcting for reduced variance in personal space in the nineteen year old sample as opposed to the total sample (see Table 16). This data suggests that there is a strong positive correlation between past time perspective and personal space. This finding should not be overemphasized due to the nature of the analysis, however, it does indicate that the failure to find a relation between personal space and personal time perspective within age groups is due to the reduction of variance when considering only part of the total sample.

## CHAPTER IV

### DISCUSSION

The purpose of this study was threefold: to examine developmental trends in personal space, to observe changing personal time perspectives with increasing age and to investigate the relationship between personal space and personal time perspective. The hypotheses concerning personal space development and sex differences in personal space were largely supported, suggesting that personal space is indeed a socially learned behavior. Several alternative theoretical explanations for these developments are possible--maturational changes, cognitive development, or social learning theory; however, discussions are primarily limited to the social learning and cognitive approaches. The hypotheses investigating personal time perspective development were supported for past time perspective but not future time perspective. The negligible differences between males and females as well as the unique developmental results of future time perspective contradict previous research and theoretical predictions. The use of a new measurement technique partially explains these differences. Only a minimal relationship between personal space and personal time perspective was observed and even this relationship was largely attributable to the common factor of changing age. This lack of support for the interrelationship of personal space and personal time perspective suggests the need for reconceptualization of the "specious" present as well as the necessity of a closer examination of the changing desirability of the future at young ages.

### Personal Space

Developmental changes in personal space were observed utilizing each type of measure. Generally there is an increase from age three to seven and a decrease in personal space size thereafter. Around age fifteen to nineteen, personal space size tends to stabilize and sharp decreases are no longer noticeable. When the child is very young he is largely dependent on other persons for personal survival. He is constantly with others and the minimal independence he has is often quite brief as there are continual interpersonal contacts for comfort and life sustaining needs. However, the child is gradually trained to maintain his independence for longer and more frequent periods of time. A major step towards autonomy occurs with the beginning of school. Thus there is increased positive reinforcement for large personal spaces and being on one's own gains in reinforcement value. Thus we see a peak in personal space size in this sample at age seven.

This increase in personal space size corresponds to Piaget's [1952] stage of concrete operations. At this stage the child begins to decenter his observations, taking into account all features of a stimulus. It is because of this skill in decentration that the child can pay attention to transformations in the stimulus object. At this stage the child is no longer dependent on his physical perception. He has attained logical operations and can carry out actions in thought as well as in physical space and also recognizes the reversibility of behaviors. The child no longer needs close contact to believe in the existence of a social relationship with his parents, for he can maintain that relationship in thought as well as in the physical world.

After this age, personal space consistently decreases in size. Social learning theory suggests that there is increased reinforcement value for small personal spaces evolving from the presence of a need

for peer group contact. Independence from parents is forsaken for dependence on friends. Previous empirical research dealing with peer group influences supports these developmental changes. Around age seven, the group is a large loosely structured "gang" in which any individual may operate independently. Observational data records independent playing with minimal real interaction. Later the "gang" forms into cliques and crowds in which interaction is frequent and conformity is great. Costanzo and Shaw [1966] found that conformity to peers is greatest between ages eleven and thirteen. Thus there is increased dependence on others resulting in reduced personal spaces.

Eventually personal space reaches a stable size (ages fifteen to nineteen). Consistent with these results is the finding that variance in personal space behavior also decreases with age with a particularly sharp decrease in variance around age fifteen or nineteen. Thus as the child learns accurate expectancies and as the reinforcement values for certain interpersonal distances stabilize, his personal space behavior also stabilizes.

The results of this study emphasize the need to include the sex of the stimulus person as a variable when attempting to examine sex differences in personal space. These analyses show that both males and females have smaller personal spaces in relation to same sex than in relation to opposite sex stimulus persons. Thus previous studies demonstrating sex differences may have been relying on data from interactions with only female stimulus persons. Closer investigation of previous results is needed to clarify this possibility.

Further, previous statements of sex differences have included subjects of many different age groups. Social learning theory suggests

that it is after the age when a person learns his sexual identity (and, therefore, possible differential behaviors) that sex differences may be found. The age of puberty is the age when sex differences are likely to be easily noticed as the child learns to differentially identify reinforcement expectancies for male vs. female behaviors. Thus it is after the age of sexual identification that sex differences in personal space would become evident. However, significant interactions of age and sex of subject were not obtained. It is only when the sex of the stimulus person is included as a variable that sex differences become clear. Males seem to be more effected by sexual differences than females, particularly at ages eleven and fifteen when puberty is at its peak and adult and adolescent social expectancies are changing about appropriate interpersonal behaviors. The behavioral data demonstrate that in relation to females only, males have larger personal spaces at these ages than females.

The major finding concerning sex differences is that the previously noted observation that both males and females have smaller same sex than opposite sex personal spaces occurs only at early ages. Thus males and females stand equally close to either sex at ages fifteen and nineteen. Large personal spaces are no longer maintained with opposite sex peers and adults. Sex differences in relation to same and opposite sex stimulus persons disappear in late adolescence and early adulthood. Presumably there are positive reinforcements for maintaining relatively small personal spaces in relation to both sexes.

Hypothesis three stated that this decrease in personal space in relation to opposite sex stimulus persons after puberty would be accompanied by an increase in personal space in relation to same sex persons. Again, it appears to be males who are more sensitive to sexual differences.

That is, while no such increase is evident in female behavior, there are slight trends for males to increase their personal spaces in relation to other males from age fifteen to nineteen. Even though these are nonsignificant trends they seem quite realistic in terms of societal demands on males. While females are reinforced for maintaining any social relationship at all, males must remain wary of becoming too friendly with other males. Undoubtedly these societal demands are decreasing in our society, they are based on sexual taboos which are strongly inherent in American culture. Thus a male may find diminishing reinforcement value in maintaining small personal spaces with other males. His behavior may be construed as inappropriate and indicative of sexual rather than friendly attachments. Females are not punished for small personal spaces in relation to females and, indeed, everyday observations of touch and physical proximity demonstrate this difference in American behavior. Thus sex differences in personal space in relation to same sex persons are noticeable in males even at later ages.

The strong and pervasive effects of familiarity on personal space size are, although not hypothesized, compatible with social learning theory. Reinforcement value is greater for a small personal space in relation to a friend than in relation to a stranger. Expectancy of receiving positive reinforcement and not receiving punishment for such increased contact is also greater with familiar stimulus persons. Thus as the child learns to recognize familiar and unfamiliar persons, he learns also to maintain a smaller personal space in relation to the familiar than the unfamiliar person. In this sense personal space can be used as indicative of a positive or negative attitude toward any specific stimulus person or group.

In summary, three major findings in personal space behavior were found, all of which can be interpreted in terms of social learning theory. First, personal space size changes with age, increasing to age seven and decreasing thereafter until it reaches a stable size. Second, any attempt to study sex differences in personal space behavior must include age and sex of stimulus person as variables since they critically affect personal space size. The use of larger personal spaces in relation to opposite sex than same-sex persons disappears after puberty. Further, personal space behavior of males is more likely to be affected by the sex of the other person at later ages due to more stringent societal definitions of propriety in male to male than in female to female interactions. Finally, personal space is smaller in relation to familiar than unfamiliar stimulus persons.

#### Personal Time Perspective

The demonstrated increase in past time perspective with increasing age supports previous research as well as a social learning approach. Several reasons, derived from social learning theory, can possibly account for this increase in past time perspective. The young child begins receiving positive reinforcement for reporting events in the recent past. Children are often questioned by parents about events that happened in school. Gradually events are more easily remembered and retold. Coupled with this increase in reinforcement is the general cognitive development of the child. There is an increase in memory and ability to store events for future reference. This ability to store and recall continues to develop throughout childhood and adolescence.

Piaget's [1969] observational data lend support for the results obtained here. The child gains the skill of reexperiencing the event at another point in time. Thus a cognition for a particular event can be recalled, reassociated and reintegrated into the child's framework. Therefore a child can remember events which no longer exist in actuality.

Older children, more engulfed in the school system, are trained and positively reinforced for recall of past historical and personal school-related events. The student who remembers what he learned yesterday receives more praise and expects to receive more praise than the student who quickly forgets. This type of training may heavily influence the child's ability to retell and value past events. Socially speaking, discussion of prior events increases in value for it becomes a distinct asset to have tales to tell in adolescent groups. Thus frequent and important past behaviors become mechanisms for establishing oneself in a group.

Corresponding to this functional use of emphasizing past time perspective to enhance one's self image may have been a need to establish a positive self image in the eyes of the experimenter. Adolescents may have felt obligated to entertain E or to make certain that E approved of their past behaviors. Although the subjects were repeatedly told that the interview would not be retold in any way to school officials, they still may have felt a need to perform well and impress the interviewer. No attempt was made to verify the events each subject reported, but all of the interviewers felt the subjects were usually honest. This continual problem of self report data may have been reduced if the interviews had been conducted outside of a school in a non-evaluative setting. Practical limitations made this impossible. Further, since the formula derived dependent measures did not depend



on mere quantity of events or on the type of event, this problem is not as critical as it might have been.

An additional explanation is possible for the increase in past time perspective in late adolescence. That is, there is a tremendous doubt and uncertainty about the role of adulthood. No longer are lives predetermined by parental models. Each adolescent must find his own vocation and style of life and this is increasingly difficult with the greater variety of jobs as well as a threatening reduction in job availability. Perhaps this inability to form any appropriate expectancies of reinforcement for the future pushes the adolescent back into appreciating the security of the past. In past time perspective, the expectancies have been established and the reinforcement received. This makes the past a desirable era for the young teenager and may partially explain his increased emphasis on the past.

Contrary to previous research, there is no increase in future time perspective corresponding to the increase in past time perspective. The predicted increase was hypothesized to peak in mid-adolescence (fifteen and nineteen) when the individual becomes concerned with vocational and personal goals in life. No significant differences were found in future time perspective but a large decrease occurred at age nineteen. Thus there seems to be a need for reevaluation of the role of the future in adolescence and early adulthood. Five possible reasons are helpful in determining why this decrease in future time perspective occurs.

First, there is a fear of the future, of its responsibilities and uncertainties. As mentioned above, reinforcements are not secure, chances of losing are increased. Thus although the reinforcement value of a future event, i.e., college degree, may be greater than that of a previous

event, i.e., high school diploma, the expectancy of obtaining that reinforcement is decreased. Currently the particular economic and political crises facing the American culture may be making the future even less secure from the adolescent's viewpoint. Jobs are scarce and more and more money is necessary. College degrees are no longer tickets of security. Thus any value placed on a future event may be overshadowed by the possible alternative negative consequences.

Second, many older subjects could think of nothing of importance in the future. Obtaining a job was usually seen as "somewhat important" but not as a major goal. Careers were seen as means of financial support, not as self-fulfilling behaviors. Traditional ambitions such as marriage and having children were rarely mentioned. Thus, there were few events which a nineteen year old could anticipate. Life, as far as expectancies, seemed to diminish.

Third, adolescents are demonstrating what Fromm [1971] has spoken of as a consumer-oriented and present-oriented approach to life. If there are few reinforcements in the future, why not attempt to stay in the present. Thus adolescents are interested in immediate pleasures such as dating and drinking. If one sees nothing of value or is afraid of the probabilities of obtaining valued goals, this philosophy is, indeed, an appropriate one to adopt.

Fourthly, another difficulty is the inability to foresee the future. Older subjects tended to list major life events for the future (graduate from college, get a job, retire) whereas they had listed everyday occurrences for the past (got a bike, met a girl, went to the beach). These events did not differ in importance as rated by the subjects but there seems to be a basic difference in magnitude or perspective. The week

at the beach last summer in retrospective was as important as college graduation in prospective. It is more difficult to report what may happen because the smaller events are not usually expected. This may explain the difference between past time perspective and future time perspective ratings, but it is a limiting factor at all ages and should not effect future time perspective developmentally.

However, Lessing [1972] has suggested that there is increased realism in today's youth. Thus they cannot create possible events which may happen and apply importance to them. They must adhere to reality and predict events which happen to almost all persons and will therefore, realistically, happen to them. This realism is not present in younger children who can easily invent possible future events. Thus, this increase in realism may explain the decrease in future time perspective.

Finally, there is a strong possibility that there is a culturally "ideal age." If one assumes this age is around twenty, then life for the nineteen year old age group is soon past the ideal and there is little to anticipate. A brief survey to establish this "ideal age" would support or refute this explanation.

Thus the lack of change in future time perspective with increasing age can be explained in terms of changing societal structures and reinforcements. Through observation of the types of events reported, it seems that there is a fear of the future, a decrease in the importance of possible future events, a decrease in the popularity of minor event responses coupled with an increased emphasis on the present, possibly due to the existence of an "ideal age." These changes directly affect future time perspective in adolescence. Specific content analyses of types of events reported at each age is needed to further understand this contradictory finding.

The differences in ratings of future importance by males and females at different ages suggest that the high school time period is crucial to a female. The results showed that eleven year old females saw future events as more important than any other age group of females did. There was a steady decrease in future importance at later ages. Corresponding to this, is the fact that fifteen year old females rated the present as more important than any other age group of females. Thus it seems that the high school era, with dating at its peak importance and the minor glories of cheerleading and proms which were often mentioned, may be the critical period in a young woman's life. After that time there is little to anticipate and it is striking that fewer females than males mentioned careers and marriage as possible future events. With marriage no longer emphasized and with careers not as popular or desirable for women as for men, it seems that female adolescents see high school as the time of fulfillment.

Males are quite opposite. Eleven year old males rate the future the least important with a continual increase thereafter. Eleven year olds see the present as more important than other age groups. Thus there is an early interest in the present followed by a great inclination toward the future. At nineteen there is still something in life to look forward to for males. However, it is important to recognize that even males are not as future oriented as they are past oriented.

In summary, three major findings resulted from the past time perspective data. First, there is a steady and continual increase in past time perspective at all ages examined. Second, future time perspective does not increase with age probably due to an increased fear of the future, a decreased evaluation of the importance of future events, increased

realism of adolescents and an increased emphasis on the pleasures of the present. Finally, high school is the peak era of importance for females while males still anticipate some benefits in the future.

#### Personal Space and Personal Time Perspective

The failure to find any relationship between personal space and personal time perspective necessitates serious reconsideration of both the assumptions underlying the hypotheses as well as the particular measurement technique utilized. The major assumption made was that both personal space and personal time perspective are ways of communicating and maintaining relationships with other persons. Contact is spatial and physical in terms of personal space with small personal spaces utilized to increase the interpersonal communication. Utilizing personal time perspective, extension into the past and future is a means of communicating across a greater time period. Thus it was predicted that a large past and future time perspective would correlate positively with small personal space size. In other words interpersonal relationships are maintained across space and time. Both the assumption concerning personal space and that concerning personal time perspective must be examined more clearly.

There is substantial evidence that a small personal space is a means of establishing and maintaining a close interpersonal relationship. Hall [1966] suggested that wives stand closer and are allowed to stand closer to husbands than other women. Sommer [1969] found that the smaller the interpersonal distance the less difference in status between two persons and therefore the closer the relationship. Repeated studies [Hiat, 1971; Kasso, 1972; Klukken, 1972; Sommer, 1962] have found that females stand

closer to others than males and since females traditionally are expected to demonstrate skill in interpersonal relationships, small personal space may be one method utilized. This study demonstrated that personal space is smaller in relation to familiar than unfamiliar persons. Thus there is much to support the assumption that small personal space is a means of increasing interpersonal contact and association, at least in a positive or friendly sense.

Thus the basis of doubt lies in the assumption that extension into the past or future indicates increased concern for contact with others. Support for this assumption needs to be experimentally obtained. On the basis of the data obtained here utilizing future time perspective, it seems that the future will not be seen as a means of personal extension or interpersonal communication at least for adolescents and young adults. Since they do not anticipate much in the future, it seems doubtful if future perspective is a means of establishing positive contacts with other people.

Further, it appears that the relationship of personal space to present time perspective may be critical. Personal space is a means of communicating now or in the present and a large present time perspective relates more to communicating with others in a current sense. As suggested by James [1952], it is the extent of time which the individual perceives as belonging to the present which defines the present for that individual. Communication with other people occurs in this sense of present short term expectations. Measurement of the present must be extended to include briefer time dimensions than months in order to experimentally examine this relationship because many persons see the present as only a brief instant. The use of personal time perspective as

a means of interpersonal communication may not be in emphasizing the past or future but by stretching the present to include the short term past and future. Thus a more sensitive measure of present time perspective is needed.

Beyond the questionable nature of these assumptions are three practical methodological explanations for the lack of support for the predicted relationship. First, the formula derived measures of personal time perspective used here were unique in that previously used indices utilized the present age as a baseline for determining personal time perspective. Prior to this change, observed developmental differences and relationships between personal space and personal time perspective may have resulted merely from age changes. Second, theoretical assumptions were concerned with relationships with other people but the measure used here does not distinguish among types of events. Therefore, it includes events which are not interpersonal in nature (i.e., bought a bicycle). The relationship to personal space may occur as hypothesized if only interpersonally related events are included in the formulation of past and future time perspective. This basic suggestion may more accurately depict changes in personal time perspective and personal space.

The third methodological reason for the failure to find a relationship between personal space and personal time perspective is the strength of age effects in the specific analyses used. When attempting to control for age factors by examining the data within each age group, a sharp reduction in variance of personal space occurred. This reduction limited the possibility of observing any statistical relationship. Indeed, when correcting for this factor, large correlations were found. Further research needs to examine the relationship of personal space and personal time perspective in a larger sample of one particular age.

Thus both theoretical and methodological problems may account for the failure to establish the relationship between personal space and personal time perspective. Large past and future time perspectives may not be indicative of increased social contact whereas an increase in the present may be. Methodologically, the difference with age based measures of personal time perspective and the inclusion of nonsocial events may have contributed to the lack of support for the hypotheses concerned with personal space and personal time perspective. Further, the effect of age reduced the possibility of attaining statistical results.

#### Conclusions

In the area of personal space, a social learning theory approach can be used to explain all three of the major results. First, developmental changes demonstrated an increase in personal space to age seven and a decrease thereafter until a stable size is reached. Variance in personal space behavior also decreases with age. These changes occur at ages consistent with changing reinforcements for interpersonal contact. Up to age seven the child receives increased positive reinforcement for increased independence. Then the reinforcement value of peer contact increases to initiate the decline in personal space size. Stable sizes occur in early adulthood when appropriate expectancies have been firmly established. The second principle result was a significant decrease in personal space size in relation to opposite sex persons after sex appropriate behaviors are learned. This decrease in personal space size in relation to opposite sex persons was accompanied by an increase in personal space size in relation to same sex persons for males only. It



was suggested that this occurs due to the more stringent rewards and punishments to which a male is subjected for sex related approved and disapproved behaviors. The third finding also supports a social learning approach in that an individual learns to value and expect reinforcement for closer contact with familiar than unfamiliar persons.

The results dealing with personal time perspective partially supported the social learning theory derived hypotheses. Past time perspective increases with increasing age due to the increased reinforcement for emphasis on the past by parents and school officials. This increased reinforcement is accompanied by an increase in ability to store events and general cognitive development. Older children may have been influenced by a desire to impress the interviewer and to establish a positive self image. Further, older children may seek the security of past reinforcement due to the insecure nature of expected future reinforcements.

This developmental increase in past time perspective was not complemented by a similar increase in future time perspective contrary to the predicted hypotheses based on social learning theory. Four reasons were suggested for this critical finding: an increased fear of the future due to decreased probabilities of goal attainment, an inability to report any important future events, an increased realism and dependence on major life events and an increased trend toward living for the present. Content analyses of the specific events reported will elucidate this contradictory result.

The third important result of the area of personal time perspective was the differentiation of critical life periods for males and females. Females viewed high school as most important whereas males still reported future importance after high school at age nineteen. The decreasing value

of marriage and families was indicated as a possible explanation for females failure to see life after high school as important.

Finally, theoretical and methodological reasons for the failure to find a relationship between personal space and personal time perspective were described. Further research needs to be completed testing the assumption that large past and future time perspectives are means of increasing interpersonal relations. Extension of present time perspective may be a means of communicating more similar to personal space. Further the failure to find the personal space and personal time perspective connection may be due to the use of measures not dependent on present age and inclusion of non-interpersonal events. Re-examination of the data in terms of these methodological suggestions may yield the predicted interrelationship.

APPENDIX A

TIME INSTRUMENTS--  
SEMANTIC DIFFERENTIAL AND TIME RELATED QUESTIONS

## YOUR PAST

important \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ unimportant

bad \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ good

active \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ passive

unsuccessful \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ successful

slow \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ fast

happy \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ sad

kind \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ cruel

## YOUR PRESENT

important \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ unimportant  
bad \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ good  
active \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ passive  
unsuccessful \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ successful  
slow \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ fast  
happy \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ sad  
kind \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ cruel

## YOUR FUTURE

important \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ unimportant  
bad \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ good  
active \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ passive  
unsuccessful \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ successful  
slow \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ fast  
happy \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ sad  
kind \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_ cruel

## TIME DOMAIN DESIRABILITY QUESTIONS

1. Suppose you are thinking about times that you really enjoy-- Did you enjoy yesterday more than today? Do you think you will enjoy tomorrow more than (insert answer given above)?
2. Why do you think is the best age to be?
3. How old are most of the happy people?
4. Suppose you could be any age. How old would you like to be?
5. Who do you think are the happiest people: those who are younger than you, those who are older than you, or those who are just your own age?
6. How old do you think you will be when you have almost everything you want?
7. What do you think is the worst age to be?
8. How old are most of the unhappy people?

APPENDIX B

FREQUENCY DISTRIBUTION OF NOT RESPONDING TO EACH  
MEASURE OF PERSONAL SPACE



## Feltboard Measures

| Stimulus Person    | Age |   |    |    |    |
|--------------------|-----|---|----|----|----|
|                    | 4   | 7 | 11 | 15 | 19 |
| Best Male Friend   | 0   | 0 | 0  | 0  | 0  |
| Father             | 1   | 0 | 0  | 0  | 0  |
| Brother            | 2   | 0 | 0  | 0  | 0  |
| Male Stranger      | 0   | 0 | 0  | 0  | 0  |
| Mailman            | 0   | 0 | 0  | 0  | 0  |
| Best Female Friend | 0   | 0 | 0  | 0  | 0  |
| Mother             | 0   | 0 | 0  | 0  | 0  |
| Sister             | 3   | 0 | 1  | 0  | 0  |
| Female Stranger    | 0   | 0 | 0  | 0  | 0  |
| Saleslady          | 1   | 0 | 0  | 0  | 0  |

## Paper and Pencil

| Stimulus Person    | Age |   |    |    |    |
|--------------------|-----|---|----|----|----|
|                    | 4   | 7 | 11 | 15 | 19 |
| Best Male Friend   | 0   | 0 | 0  | 0  | 0  |
| Father             | 0   | 0 | 0  | 0  | 0  |
| Brother            | 1   | 0 | 0  | 0  | 0  |
| Male Stranger      | 0   | 0 | 0  | 0  | 0  |
| Mailman            | 0   | 0 | 0  | 0  | 0  |
| Best Female Friend | 0   | 0 | 0  | 0  | 0  |
| Mother             | 0   | 0 | 0  | 0  | 0  |
| Sister             | 4   | 0 | 0  | 0  | 0  |
| Female Stranger    | 0   | 0 | 0  | 0  | 0  |
| Saleslady          | 0   | 0 | 0  | 0  | 0  |

APPENDIX C

CORRELATION COEFFICIENTS AND CORRESPONDING SAMPLE SIZES  
FOR COMPOSITE PERSONAL SPACE MEASURES COMPARISONS

TABLE 20

The Correlation Coefficients and Corresponding Sample Sizes for the  
Composite Personal Space Measures Comparisons

| Measure | Behavioral    |               |                |                |                | Felt Board     |                |                |                |                | Paper and Pencil |    |    |    |  |
|---------|---------------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|------------------|----|----|----|--|
|         | UM            | UF            | FM             | FF             | UM             | UF             | FM             | FF             | UM             | UF             | FM               | FF | UM | UF |  |
|         | 1             | 2             | 3              | 4              | 5              | 6              | 7              | 8              | 9              | 10             | 7                | 8  | 9  | 10 |  |
| 1       | 1.000<br>(96) |               |                |                |                |                |                |                |                |                |                  |    |    |    |  |
| 2       | .867<br>(96)  | 1.000<br>(96) |                |                |                |                |                |                |                |                |                  |    |    |    |  |
| 3       | .321<br>(96)  | .342<br>(96)  | 1.000<br>(120) |                |                |                |                |                |                |                |                  |    |    |    |  |
| 4       | .301<br>(96)  | .338<br>(96)  | .626<br>(120)  | 1.000<br>(120) |                |                |                |                |                |                |                  |    |    |    |  |
| 5       | .421<br>(96)  | .448<br>(96)  | .582<br>(120)  | .516<br>(120)  | 1.000<br>(120) |                |                |                |                |                |                  |    |    |    |  |
| 6       | .408<br>(96)  | .509<br>(96)  | .550<br>(120)  | .595<br>(120)  | .745<br>(120)  | 1.000<br>(120) |                |                |                |                |                  |    |    |    |  |
| 7       | .358<br>(96)  | .419<br>(96)  | .450<br>(120)  | .164<br>(120)  | .307<br>(120)  | .256<br>(120)  | 1.000<br>(120) |                |                |                |                  |    |    |    |  |
| 8       | .316<br>(96)  | .485<br>(96)  | .401<br>(120)  | .282<br>(120)  | .332<br>(120)  | .336<br>(120)  | .722<br>(120)  | 1.000<br>(120) |                |                |                  |    |    |    |  |
| 9       | .414<br>(96)  | .490<br>(96)  | .269<br>(120)  | .136<br>(120)  | .403<br>(120)  | .431<br>(120)  | .678<br>(120)  | .633<br>(120)  | 1.000<br>(120) |                |                  |    |    |    |  |
| 10      | .494<br>(96)  | .632<br>(96)  | .334<br>(120)  | .253<br>(120)  | .447<br>(120)  | .507<br>(120)  | .625<br>(120)  | .710<br>(120)  | .826<br>(120)  | 1.000<br>(120) |                  |    |    |    |  |

APPENDIX D

CORRELATION COEFFICIENTS AND CORRESPONDING SAMPLE SIZES  
FOR PERSONAL TIME PERSPECTIVE MEASURES

TABLE 21

The Correlation Coefficients and Corresponding Sample Sizes for the  
Personal Time Perspective Measures

| Measure | Evaluative    |               |               | Number of Questions |               |               | Good          |               |
|---------|---------------|---------------|---------------|---------------------|---------------|---------------|---------------|---------------|
|         | Past<br>1     | Present<br>2  | Future<br>3   | Past<br>4           | Present<br>5  | Future<br>6   | Past<br>7     | Present<br>8  |
| 1       | 1.000<br>(94) |               |               |                     |               |               |               |               |
| 2       | .746<br>(94)  | 1.000<br>(94) |               |                     |               |               |               |               |
| 3       | .686<br>(94)  | .746<br>(94)  | 1.000<br>(94) |                     |               |               |               |               |
| 4       | .092<br>(94)  | .000<br>(94)  | -.005<br>(94) | 1.000<br>(94)       |               |               |               |               |
| 5       | -.036<br>(94) | .036<br>(94)  | -.009<br>(94) | -.209<br>(94)       | 1.000<br>(94) |               |               |               |
| 6       | .019<br>(94)  | .001<br>(94)  | -.062<br>(94) | -.548<br>(94)       | -.240<br>(94) | 1.000<br>(94) |               |               |
| 7       | .864<br>(94)  | .634<br>(94)  | .569<br>(94)  | -.007<br>(94)       | .081<br>(94)  | .118<br>(94)  | 1.000<br>(94) |               |
| 8       | .530<br>(94)  | .716<br>(94)  | .551<br>(94)  | -.136<br>(94)       | -.094<br>(94) | .135<br>(94)  | .593<br>(94)  | 1.000<br>(94) |
| 9       | .452<br>(94)  | .508<br>(94)  | .752<br>(94)  | -.024<br>(94)       | -.046<br>(94) | .055<br>(94)  | .374<br>(94)  | .357<br>(94)  |
| 10      | .176<br>(93)  | .259<br>(93)  | .236<br>(93)  | .158<br>(94)        | .029<br>(93)  | -.218<br>(93) | .186<br>(93)  | .200<br>(93)  |
| 11      | .141<br>(94)  | .200<br>(94)  | .152<br>(94)  | .179<br>(94)        | -.077<br>(94) | -.180<br>(94) | .067<br>(94)  | .201<br>(94)  |
| 12      | .204<br>(93)  | .245<br>(93)  | .298<br>(93)  | .194<br>(93)        | -.083<br>(93) | -.245<br>(93) | .157<br>(93)  | .138<br>(93)  |
| 13      | .358<br>(93)  | .442<br>(93)  | .499<br>(93)  | .006<br>(93)        | -.044<br>(93) | -.118<br>(93) | .426<br>(93)  | .457<br>(93)  |
| 14      | .445<br>(91)  | .489<br>(91)  | .325<br>(91)  | .153<br>(91)        | .033<br>(91)  | -.143<br>(91) | .382<br>(91)  | .287<br>(91)  |
| 15      | .065<br>(90)  | .146<br>(90)  | .245<br>(90)  | .087<br>(90)        | -.176<br>(90) | -.135<br>(90) | -.099<br>(90) | -.094<br>(90) |
| 16      | .094<br>(94)  | .107<br>(94)  | .200<br>(94)  | .172<br>(94)        | -.041<br>(94) | -.175<br>(94) | .028<br>(94)  | .080<br>(94)  |
| 17      | -.325<br>(94) | -.380<br>(94) | .269<br>(94)  | -.133<br>(94)       | -.056<br>(94) | .116<br>(94)  | -.370<br>(94) | -.379<br>(94) |

TABLE 21--extended

| /Bad<br>Future<br>9 | Number of Events |               |               | Importance    |               |               | Formula       |               |
|---------------------|------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
|                     | Past<br>10       | Present<br>11 | Future<br>12  | Past<br>13    | Present<br>14 | Future<br>15  | Past<br>16    | Future<br>17  |
| 1.000<br>(93)       |                  |               |               |               |               |               |               |               |
| .005<br>(94)        | 1.000<br>(95)    |               |               |               |               |               |               |               |
| .018<br>(93)        | .727<br>(95)     | 1.000<br>(96) |               |               |               |               |               |               |
| .124<br>(93)        | .593<br>(95)     | .524<br>(95)  | 1.000<br>(95) |               |               |               |               |               |
| .286<br>(93)        | .161<br>(95)     | .148<br>(95)  | .321<br>(95)  | 1.000<br>(95) |               |               |               |               |
| .212<br>(91)        | .101<br>(92)     | .161<br>(93)  | .106<br>(92)  | .389<br>(92)  | 1.000<br>(93) |               |               |               |
| .159<br>(90)        | .017<br>(92)     | .014<br>(92)  | .084<br>(92)  | .164<br>(92)  | .203<br>(96)  | 1.000<br>(92) |               |               |
| .079<br>(94)        | .320<br>(95)     | .468<br>(96)  | .465<br>(95)  | .212<br>(95)  | .278<br>(93)  | .101<br>(92)  | 1.000<br>(96) |               |
| -.178<br>(94)       | -.034<br>(95)    | -.061<br>(96) | -.034<br>(95) | -.230<br>(95) | -.063<br>(93) | .083<br>(91)  | .004<br>(96)  | 1.000<br>(96) |

APPENDIX E

ANOVAS FOR INDIVIDUAL PERSONAL SPACE MEASUREMENTS

TABLE 22  
ANOVA for the Felt Board Measures

| Stimulus Person    | Source  | F                  |
|--------------------|---------|--------------------|
| Best Male Friend   | Sex (S) | 1.67               |
|                    | Age (A) | 8.38 <sup>a</sup>  |
|                    | S × A   | .62                |
| Father             | Sex (S) | 1.20               |
|                    | Age (A) | 7.70 <sup>a</sup>  |
|                    | S × A   | .12                |
| Brother            | Sex (S) | .11                |
|                    | Age (A) | 8.47 <sup>a</sup>  |
|                    | S × A   | .85                |
| Male Stranger      | Sex (S) | .01                |
|                    | Age (A) | 14.23 <sup>a</sup> |
|                    | S × A   | .82                |
| Mailman            | Sex (S) | 2.81               |
|                    | Age (A) | 7.78 <sup>a</sup>  |
|                    | S × A   | .16                |
| Best Female Friend | Sex (S) | 7.08 <sup>b</sup>  |
|                    | Age (A) | 11.38 <sup>a</sup> |
|                    | S × A   | 2.02               |
| Mother             | Sex (S) | .11                |
|                    | Age (A) | 11.87 <sup>a</sup> |
|                    | S × A   | .85                |
| Sister             | Sex (S) | 2.37               |
|                    | Age (A) | 3.91 <sup>b</sup>  |
|                    | S × A   | .88                |
| Female Stranger    | Sex (S) | .28                |
|                    | Age (A) | 13.34 <sup>a</sup> |
|                    | S × A   | .86                |
| Saleslady          | Sex (S) | 4.87 <sup>c</sup>  |
|                    | Age (A) | 4.88 <sup>d</sup>  |
|                    | S × A   | .46                |

<sup>a</sup> $\frac{p}{p} < .0001.$

<sup>b</sup> $\frac{p}{p} < .01.$

<sup>c</sup> $\frac{p}{p} < .05.$

<sup>d</sup> $\frac{p}{p} < .001.$



TABLE 23  
ANOVA for the Paper and Pencil Measures

| Stimulus Person    | Source  | F                  |
|--------------------|---------|--------------------|
| Best Male Friend   | Sex (S) | .01                |
|                    | Age (A) | 9.88 <sup>a</sup>  |
|                    | S × A   | .58                |
| Father             | Sex (S) | .92 <sup>b</sup>   |
|                    | Age (A) | 2.56 <sup>b</sup>  |
|                    | S × A   | 2.07               |
| Brother            | Sex (S) | 3.18 <sup>c</sup>  |
|                    | Age (A) | 6.74 <sup>c</sup>  |
|                    | S × A   | 1.21               |
| Male Stranger      | Sex (S) | .18                |
|                    | Age (A) | 10.88              |
|                    | S × A   | .87                |
| Mailman            | Sex (S) | .15                |
|                    | Age (A) | 1.54               |
|                    | S × A   | .84                |
| Best Female Friend | Sex (S) | .46                |
|                    | Age (A) | 9.48 <sup>a</sup>  |
|                    | S × A   | 2.11               |
| Mother             | Sex (S) | .85 <sup>c</sup>   |
|                    | Age (A) | 4.97 <sup>c</sup>  |
|                    | S × A   | 1.28               |
| Sister             | Sex (S) | .28 <sup>d</sup>   |
|                    | Age (A) | 4.05 <sup>d</sup>  |
|                    | S × A   | .46                |
| Female Stranger    | Sex (S) | 1.11               |
|                    | Age (A) | 11.32 <sup>a</sup> |
|                    | S × A   | 1.75               |
| Saleslady          | Sex (S) | .33                |
|                    | Age (A) | 1.95               |
|                    | S × A   | 1.75               |

<sup>a</sup><sub>p</sub> < .0001.

<sup>b</sup><sub>p</sub> < .05.

<sup>c</sup><sub>p</sub> < .001.

<sup>d</sup><sub>p</sub> < .01.

TABLE 24  
ANOVA for the Behavioral Measures

| Stimulus Person      | Source  | F                  |
|----------------------|---------|--------------------|
| Approaches Male      | Sex (S) | .28                |
|                      | Age (A) | 6.58 <sup>a</sup>  |
|                      | S × A   | 2.00               |
| Approaches Female    | Sex (S) | .71 <sub>b</sub>   |
|                      | Age (A) | 13.19 <sup>b</sup> |
|                      | S × A   | 3.36 <sup>c</sup>  |
| Approached by Male   | Sex (S) | .02 <sub>b</sub>   |
|                      | Age (A) | 9.50 <sup>b</sup>  |
|                      | S × A   | 1.20               |
| Approached by Female | Sex (S) | 1.58 <sub>b</sub>  |
|                      | Age (A) | 8.81 <sup>b</sup>  |
|                      | S × A   | 2.80 <sup>c</sup>  |

<sup>a</sup><sub>p</sub> < .001.

<sup>b</sup><sub>p</sub> < .0001.

<sup>c</sup><sub>p</sub> < .05.

APPENDIX F

SIGNIFICANT PERSONAL TIME PERSPECTIVE ANOVAS

TABLE 25

## The Significant Personal Time Perspective ANOVAS

|                     |         |         |                    |
|---------------------|---------|---------|--------------------|
| Mean Evaluative     | Past    | Sex (S) | 2.03               |
|                     |         | Age (A) | 2.20 <sup>a</sup>  |
|                     |         | S × A   | 1.64               |
|                     | Future  | Sex (S) | .61                |
|                     |         | Age (A) | 2.18 <sup>a</sup>  |
|                     |         | S × A   | 1.15               |
| Number of Questions | Past    | Sex (S) | .11 <sup>b</sup>   |
|                     |         | Age (A) | 3.04 <sup>b</sup>  |
|                     |         | S × A   | 1.98               |
|                     | Future  | Sex (S) | .01                |
|                     |         | Age (A) | 4.02 <sup>c</sup>  |
|                     |         | S × A   | 2.06               |
| Good/Bad            | Present | Sex (S) | .05                |
|                     |         | Age (A) | 3.93 <sup>c</sup>  |
|                     |         | S × A   | .31                |
| Number of Events    | Past    | Sex (S) | 4.30 <sup>b</sup>  |
|                     |         | Age (A) | 12.20 <sup>d</sup> |
|                     |         | S × A   | .97                |
|                     | Present | Sex (S) | 1.19               |
|                     |         | Age (A) | 11.88 <sup>d</sup> |
|                     |         | S × A   | .53                |
|                     | Future  | Sex (S) | .37                |
|                     |         | Age (A) | 26.55 <sup>d</sup> |
|                     |         | S × A   | .37                |
| Importance          | Past    | Sex (S) | .97                |
|                     |         | Age (A) | 2.11 <sup>a</sup>  |
|                     |         | S × A   | .22                |
|                     | Present | Sex (S) | .03                |
|                     |         | Age (A) | 1.87               |
|                     |         | S × A   | 3.49 <sup>b</sup>  |
|                     | Future  | Sex (S) | .28                |
|                     |         | Age (A) | .63                |
|                     |         | S × A   | 2.30 <sup>a</sup>  |

<sup>a</sup><sub>p</sub> < .10.<sup>b</sup><sub>p</sub> < .05.<sup>c</sup><sub>p</sub> < .01.<sup>d</sup><sub>p</sub> < .0001.

APPENDIX G

VARIANCES FOR INDIVIDUAL PERSONAL SPACE MEASURES

TABLE 26  
 Variances of the Felt Board Measures

| Stimulus Person  | Age | Variance | Stimulus Person    | Age | Variance |
|------------------|-----|----------|--------------------|-----|----------|
| Best Male Friend | 3   | 4144.78  | Best Female Friend | 3   | 8854.81  |
|                  | 7   | 9830.72  |                    | 7   | 7034.18  |
|                  | 11  | 529.46   |                    | 11  | 3194.51  |
|                  | 15  | 382.59   |                    | 15  | 269.94   |
|                  | 19  | 1163.49  |                    | 19  | 448.59   |
| Father           | 3   | 4160.25  | Mother             | 3   | 3778.56  |
|                  | 7   | 8815.33  |                    | 7   | 4812.20  |
|                  | 11  | 626.50   |                    | 11  | 261.15   |
|                  | 15  | 581.77   |                    | 15  | 1311.16  |
|                  | 19  | 1938.64  |                    | 19  | 1291.68  |
| Brother          | 3   | 5664.07  | Sister             | 3   | 7775.71  |
|                  | 7   | 7874.79  |                    | 7   | 7118.30  |
|                  | 11  | 6689.60  |                    | 11  | 8843.52  |
|                  | 15  | 522.58   |                    | 15  | 4985.77  |
|                  | 19  | 2775.18  |                    | 19  | 6271.06  |
| Male Stranger    | 3   | 7773.95  | Female Stranger    | 3   | 8206.55  |
|                  | 7   | 7937.03  |                    | 7   | 9343.16  |
|                  | 11  | 8643.42  |                    | 11  | 6533.49  |
|                  | 15  | 5631.00  |                    | 15  | 4027.17  |
|                  | 19  | 4826.08  |                    | 19  | 3564.09  |
| Mailman          | 3   | 6181.10  | Saleslady          | 3   | 4936.47  |
|                  | 7   | 5862.96  |                    | 7   | 7649.25  |
|                  | 11  | 2534.12  |                    | 11  | 3331.60  |
|                  | 15  | 707.56   |                    | 15  | 6557.76  |
|                  | 19  | 6076.20  |                    | 19  | 5320.24  |

TABLE 27  
 Variances of the Paper and Pencil Measures

| Stimulus Person  | Age | Variance | Stimulus Person    | Age | Variance |
|------------------|-----|----------|--------------------|-----|----------|
| Best Male Friend | 3   | 269.94   | Best Female Friend | 3   | 216.09   |
|                  | 7   | 281.57   |                    | 7   | 259.85   |
|                  | 11  | 44.36    |                    | 11  | 350.81   |
|                  | 15  | 43.03    |                    | 15  | 27.56    |
|                  | 19  | 56.25    |                    | 19  | 28.62    |
| Father           | 3   | 348.94   | Mother             | 3   | 211.99   |
|                  | 7   | 291.38   |                    | 7   | 460.53   |
|                  | 11  | 111.30   |                    | 11  | 52.71    |
|                  | 15  | 39.69    |                    | 15  | 26.94    |
|                  | 19  | 84.27    |                    | 19  | 50.55    |
| Brother          | 3   | 576.96   | Sister             | 3   | 536.38   |
|                  | 7   | 400.00   |                    | 7   | 419.43   |
|                  | 11  | 346.70   |                    | 11  | 400.40   |
|                  | 15  | 43.69    |                    | 15  | 37.45    |
|                  | 19  | 35.64    |                    | 19  | 229.22   |
| Male Stranger    | 3   | 578.88   | Female Stranger    | 3   | 695.90   |
|                  | 7   | 485.76   |                    | 7   | 446.90   |
|                  | 11  | 589.52   |                    | 11  | 497.29   |
|                  | 15  | 225.60   |                    | 15  | 119.46   |
|                  | 19  | 148.84   |                    | 19  | 124.99   |
| Mailman          | 3   | 534.07   | Saleslady          | 3   | 447.32   |
|                  | 7   | 248.06   |                    | 7   | 282.24   |
|                  | 11  | 341.88   |                    | 11  | 246.49   |
|                  | 15  | 51.41    |                    | 15  | 238.08   |
|                  | 19  | 273.24   |                    | 19  | 96.82    |

TABLE 28  
 Variances of the Behavioral Measures

| Stimulus<br>Person   | Age | Variance |
|----------------------|-----|----------|
| Approached by Male   | 7   | 2392.19  |
|                      | 11  | 1869.70  |
|                      | 15  | 1689.21  |
|                      | 19  | 334.16   |
| Approaches Male      | 7   | 1733.06  |
|                      | 11  | 1861.06  |
|                      | 15  | 1229.90  |
|                      | 19  | 174.77   |
| Approached by Female | 7   | 2081.18  |
|                      | 11  | 1873.16  |
|                      | 15  | 1099.59  |
|                      | 19  | 336.36   |
| Approaches Female    | 7   | 2416.71  |
|                      | 11  | 1554.72  |
|                      | 15  | 1668.72  |
|                      | 19  | 181.17   |



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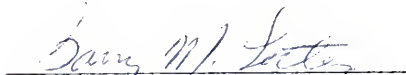
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Lawrence J. Severy  
Assistant Professor of Psychology


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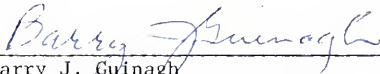
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